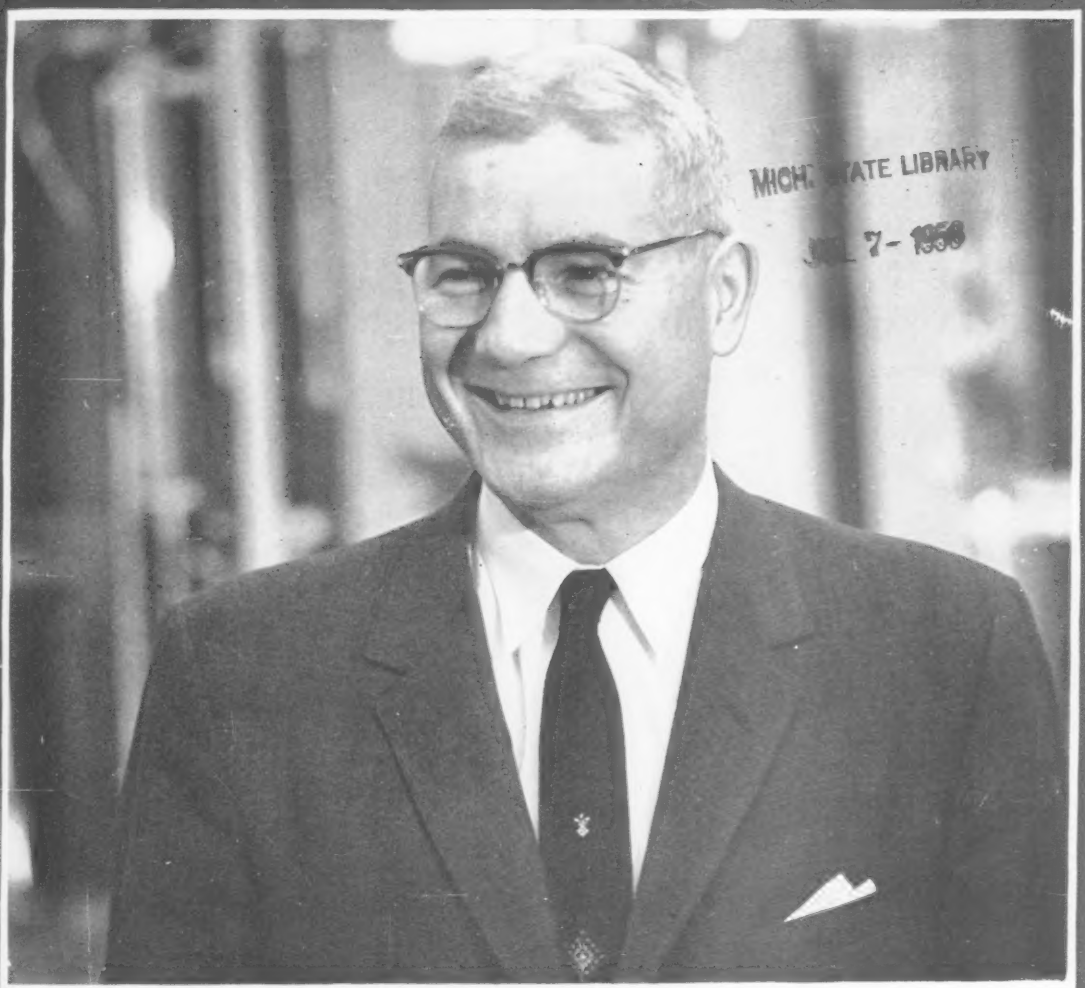
ENGINEERING NEWS-RECORD

JULY 3, 1958

PRICE 30 CENTS

CONTENTS ON PAGE 17

- $170 million for missile construction p. 24
- U.S. lift-slab record goes up again p. 30



MICH. STATE LIBRARY
JUL 7- 1958

ASTM's Woods: A soils man hits the top p. 62

MICH STATE LIBRARY
LANSING MICH 13

A McGRAW-HILL PUBLICATION

WHY ARMCO SERVES YOU BETTER

Salesman with muddy shoes

He could also have dirty hands, and a "crick" in his back. These are the occupational hazards of the *typical* Armco sales engineer.

He may get this way from twisting a soil auger in helping an engineer plot the location for Armco HEL-COR® Perforated Pipe; from showing a new crew how easily Armco MULTI-PLATE® Pipe bolts together; or from a construction-site inspection trip requested by a contractor to help plan drainage structures. This is the type of all-out service he is trained to give his engineer and contractor customers — and the type of service you will soon *learn to expect*.

He is one of hundreds of men selling Armco drainage and construction products from more than 175 cities all over the United States and Canada. And from one of the 56 Armco fabricating plants he can get the prompt service you need. Strategically located, one of these plants is probably near you. This means fast delivery plus transportation savings.

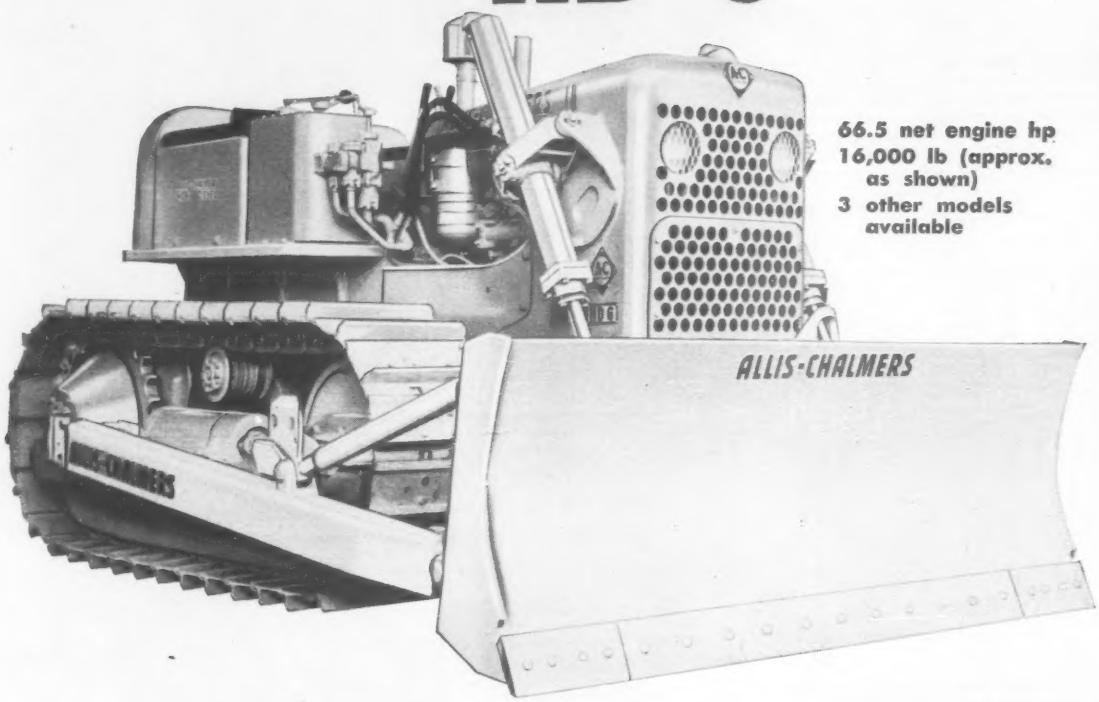
Your own Armco salesman may be an ambitious young engineer, or a 25-year veteran. Both know the answers on Armco products — whether it be through decades of practical experience, months of intensive training, or both.

For a good sample of this personal, friendly service, talk with your local Armco man about your current construction problems. If you do not know him, write for his name and address. Armco Drainage & Metal Products, Inc., 5608 Curtis St., Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

POWER for the job

PORTABLE without a permit

ALLIS-CHALMERS HD-6 Dozer



66.5 net engine hp
16,000 lb (approx. as shown)
3 other models available

Contractors find the Allis-Chalmers HD-6 measures up — both in performance and easy transport. It has the size, power and dependability to make money on all your earthmoving jobs.

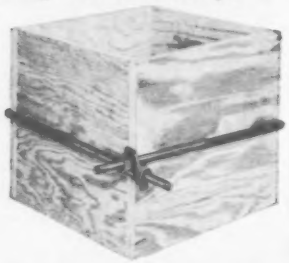
When traveling from job to job, there's no need to remove the dozer. The 8-ft. blade — legal width for highway travel — lets you load your HD-6 right onto a truck or trailer — travel quickly with no time lost.

The HD-6 is a maintenance man's tractor. Even in mud, sand, rock and dust, Allis-Chalmers Positive Seals protect tapered roller bearings on truck wheels, idlers and support rollers. These smooth-running assemblies require lubrication only once every 1,000 hours — change greasing time to profitable work time.

There are many reasons why more and more contractors are using HD-6 dozer tractors. See your Allis-Chalmers dealer. He'll be glad to demonstrate on your job. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

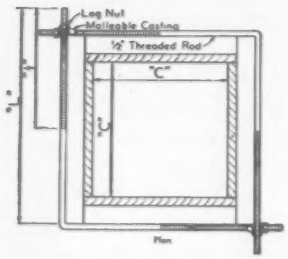
Look ahead... *move ahead* ...and stay ahead with **ALLIS-CHALMERS**

FAST FORMING FOR CONCRETE COLUMNS with reusable Richmond Challenger Column Clamps



Reusable Richmond Challenger Column Clamps are simple, economical two piece clamps made from 1/2" diameter steel rods. The corner castings are malleable iron designed for quick engagement. Adjustment to correct size is easy because of the coarse thread and nut at each end of the rod.

Multi use, at minimum depreciation, eliminates repeated material costs for each column. There is no material loss. Richmond Challengers are light in weight and help you to save time, labor and materials in the erection of forms for concrete columns from 8"x8" to 24"x24" in width.



A "U", rather than a hole, is provided in the malleable casting. This "U" allows you to lay the connecting rod into position. A few turns of the nut securely tightens the rod to the form.

Richmond has a full line of form tying devices. These and more than 400 other Richmond-engineered Tying Devices, Anchorages and Accessories, applicable for all types of concrete construction, are shown in detail in the current Richmond Handbook. Send for your copy—and if you have a specific concreting problem, write to:

ENGINEERING NEWS-RECORD

EIGHTY-FOURTH YEAR OF PUBLICATION

MEMBER

Editorial Offices, 330 W. 42nd St., New York 36, N. Y.
New York - LOngacre 4-3000; Chicago - MOhawk 4-5800; San Francisco - DOuglas 2-4600;
Washington - REpublic 7-4330

Editor, Waldo G. Bowman

Senior Staff Editor, Arthur J. Fox, Jr.

Managing Editor, Edward H. DeHart

Senior Editors, Frederick S. Merritt, Howard Jacoby

Highways, Airports—Transportation
Edward M. Young, Jr.
Marc Leggiero, Louis A. Volse

Buildings, Bridges—Structures
Frederick S. Merritt
James B. Sullivan, Marianne Stern, David B. Hill

Rivers, Sanitation—Water Resources
Howard Jacoby
Joseph N. Todaro, John P. Mahoney

Finance, Labor—Management
Robert J. Stinson, Charles J. Harding, Stuart D. Boynton

Regional Editors
J. Roland Carr, *Chicago, 520 N. Michigan Ave.*
Laurens L. Wise, *San Francisco, 68 Post St.*

Copy—Production
Barbara Lamb
Evelyn Steple
Shirley Russell
John C. Greenough

Presentation
Harry W. Jensen, Philip J. Horn, Jr.

Statistics, Prices, Costs—Business News
Elsie Eaves, *Manager*
Julia Mahoney, *Construction Reports*
Mildred Wetzel, Marian Sciorra
Diane Tartaglia, Marie Moravsik, Rose Williamson
James Webber, Ruth Carlson, *Economics*
Marie Roessler, Evelyn Huber, *Statistics*
David Farquhar, Bertha Herrmann, *Prices, Unit Prices*

Editorial Research and Indexing
Helen Rich
Eva Gierat, Rene Hay, Patricia Witschger

Consulting Editors: **Van Tuyl Boughton,** *New York*
Nathan A. Bowers, *San Francisco*

Advertising Sales Manager: **Donald S. Robertson**

Circulation Manager: **Edward F. Bressler**

Washington Bureau, National Press Bldg., Washington 4, D. C., George B. Bryant, Jr., Chief, Alan E. Adams, Glen R. Bayless, Roy Calvin, Ernest Conine, John C. L. Donaldson, Jay Flocken, Boyd France, Anthony DeLeonardis, Arthur J. Kraft, Donald O. Loomis, Gladys Montgomery, Arthur L. Moore, Seth T. Payne, Dean Reed, Morton A. Reichek, Caroline W. Robertson, Vincent B. Smith.

Domestic News Bureaus: Atlanta—801 Rhodes-Haverty Bldg., Atlanta 3, Charles T. Dixon, Jr., Chief, Frances Ridgway; **Chicago**—520 North Michigan Ave., Chicago 11, Stewart W. Ramsey, Chief; **Cleveland**—55 Public Square, Cleveland 13, William G. Meldrum, Chief, Violet Bashian; **Dallas**—901 Vaughn Bldg., Dallas, Kemp Anderson Jr., Chief, Lorraine Smith; **Detroit**—856 Penobscot Bldg., Detroit 26, Donald MacDonald, Chief, Nancy Moore; **Los Angeles**—1125 West 6th Ave., Los Angeles 17, John Kearny, Chief, Michael Murphy, Jack Meyer, Marvin Petal; **San Francisco**—68 Post St., San Francisco 4, Margaret Ralston, Chief, Jenness Keene, Sue Johnson; **Seattle**—6040 Fifth Ave., N. E., Seattle, Ray Bloomberg.

Foreign News Bureaus: New York—John Wilhelm, Editor; **London**—William J. Coughlin; **Paris**—Robert E. Farrell; **Mexico City**—Peter Weaver; **Bonn**—Morrie Helitzer; **Beirut**—O. M. Marashian; **Tokyo**—Sol Sanders; **Caracas**—John Pearson. Correspondents in 55 cities throughout the world.

Correspondents: In 79 principal cities in the U. S. and possessions and Canada.

McGraw-Hill Economics Department: Dexter M. Keezer, Director; W. H. Chartener.

Robert F. Boger, Publisher

ENGINEERING NEWS-RECORD, Vol. 161, No. 1, July 3, 1958

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. Publication Office, 99-129 North Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or change in address. Executive, Editorial, Advertising and Circulation Offices, McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice President; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice President, Publications Division; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. Subscriptions are solicited only from persons with identifiable commercial or professional interests in construction and building. Position and company connection must be indicated on subscription orders. United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 50 cents; foreign $20.00 per year, payable in advance. Second-Class mail privileges authorized at Albany, New York. Printed in U.S.A.

Title registered in U.S. Patent Office. © Copyright 1958 McGraw-Hill Publishing Company, Inc. All Rights Reserved.

SUBSCRIPTIONS: Send subscription correspondence and change of address to Subscription Manager, ENGINEERING NEWS-RECORD, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify publisher promptly of any change of address, giving old as well as new address, and including postal zone number, if any. If possible, enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

Postmaster: Please send Form 3579 to Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

3060
8817

B.F.Goodrich

B.F.Goodrich Rock Logger tires can be retreaded 3 times, ready-mix company reports

GRAYSTONE of Olympia, Washington specializes in ready-mix concrete. Trucks travel on and off-the-road in stop-and-go service, rolling over such tire-killers as rocks and steel scraps at construction sites. Yet Graystone finds its tires often can be *retreaded 3 times* with practically new tire service from each retread. Why? Graystone uses B.F.Goodrich Rock Logger tires!

Graystone Dispatcher George Meyer says, "B.F.Goodrich Rock Logger tires give the kind of traction we need in rough weather." Husky Rock Logger cleats dig in to give you maximum pulling power in forward or reverse. "They give rugged dependability around rough construction work," he adds.

B.F.Goodrich Rock Logger tires are available with FLEX-RITE NYLON cord construction. FLEX-RITE NYLON withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. Result: This B.F.Goodrich cord body outwears even the extra-thick Rock Logger tread, can often be retreaded again and again!

Your nearby B.F.Goodrich dealer is listed under Tires in the Yellow Pages of your phone book. See him today, and start enjoying the extra savings B.F.Goodrich tires give. *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment

B.F.Goodrich *truck tires*

© The B.F.Goodrich Company

NEW "JIMMY" DIESEL BOOSTS PROFITS

Jack Cole Company reports new GM "6-71E" engine gets over 7 miles per gallon—engine maintenance costs less than ½ cent per mile for parts and labor

Figures coming from key highway haulers prove the new General Motors "71E" Diesel leads all others in economy as well as performance.

Birmingham, Alabama's Jack Cole Company—operating a fleet of 76 GM Diesel-powered truck-tractors nearly a million miles a month—reports that the new GM "6-71E" engines are delivering fuel mileages from 7.2 to 7.4 per gallon hauling payloads up to 40,000 lbs. Seventeen of these units have been in service almost a year—ten more have recently been added.

Other "Jimmy" Diesels in this fleet have accumulated 250,000 to 270,000 miles without overhaul and with total engine maintenance cost of less than one-half cent per mile. Fleet Supervisor O. B. Johns expects at least 300,000 miles before overhaul. He prefers GM Diesels because "overhaul[illegible]ent. And cost less than other Diesels, ease of maintenan[illegible]ucks, be eliminates road failures and clean burning of fu[illegible]71E" Dies eliminates smudging of trailers."[illegible]VW and

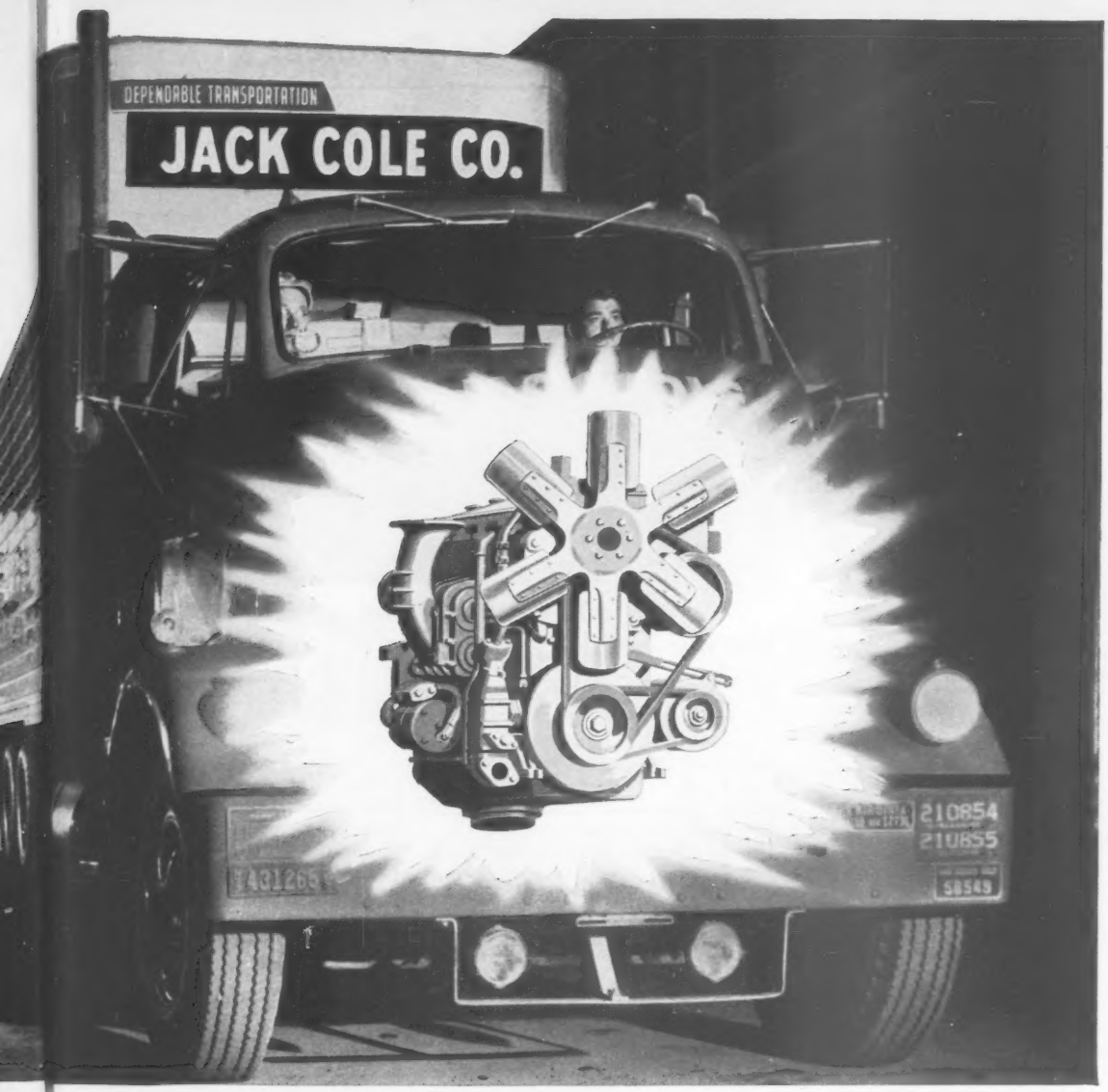
Compare features and specifications—check hors[illegible] power and torque curves *at the same altitude a[illegible] temperature.* You'll find the 2-cycle "Jimm[illegible] Diesel gives you *more power with less weight—greater torque output across the entire driving range—less fuel input per equivalent horsepower.* It means a profit-boosting increase in revenues and lower costs per mile!

Call your GM Diesel distributor about repowering present equip-

Truck
"6-71E
harnes
delive
171 h.

GM
GENERAL MOTORS
DETROIT DIESEL POWER

[illegible]onal Offices:



rhaulent. And when you're in the market for new enan[t]rucks, be sure to ask for this great new GM of fu[l]71E" Diesel—it's available for *any* make, 26,000 [G]VW and up!

Truck and bus engines: "[4]-71E"—140 h.p.; "6-71E"—210 h.p. New Turbopower models harness the energy of exhaust gases to deliver even higher power: "4-71T"—171 h.p.; "6-71T"—236 h.p.

Write for brochure on new lightweight aluminum version of the "6-71E" "Jimmy" Diesel engine. It weighs up to 690 lbs. less than competitors in 210-h.p. range.

GM
1908 · 1958

DETROIT DIESEL

Engine Division of General Motors, Detroit 28, Michigan

[R]egional Offices: NEW YORK, ATLANTA, DETROIT, CHICAGO, DALLAS, SAN FRANCISCO • In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario
Single Engines...30 to 364 H. P. Multiple Units...Up to 893 H. P.

To protect your light-load excavations, use the method that costs less, helps get your work done faster and safer.

Rent or Buy Foster's Lightweight Piling, the modern, easy-to-handle steel sheeting that gives you greatest strength, pound-for-pound of any lightweight piling. It can be driven by maul or with lightweight power hammers—without special rigs or tools. New design interlock cannot jam, locks rigidly when installed, yet can be pulled easily and re-used again and again on many jobs. Immediate shipments from Foster stocks in 10-gage, in both 12 and 15 inch laying widths.

Write or call your Foster office for Lightweight Piling Catalog No. EP-7

SINCE 1901

COMPLETE CONTRACTOR SERVICE

PILING • PIPE • RAIL • HIGHWAY PRODUCTS

L. B. FOSTER CO.

PITTSBURGH 30 • ATLANTA 8 • NEW YORK 7
CHICAGO 4 • HOUSTON 2 • LOS ANGELES 5

Reader Comment

Marine Fender Discussion Proves Timely

SIR—The timely article "Docking Fenders: Key to Pier Protection" (ENR May 8, p. 40) is very instructive in giving the theory and practice of pier fendering today. Engineers dealing with marine structures should read this article with great interest.

I call attention to a buoyancy fender (above) that I used at Haifa harbor when it was a British Naval Base. To avoid the damaging impact of heavy naval vessels alongside an oil dock, I designed and built a number of these fenders. They proved very satisfactory, with the impact energy of the ship being taken up in pushing downward against buoyant forces in the tank.

PERRY W. ETKES, *P. E.*
Consulting Engineer,
New York, N. Y.

SIR—. . . an interesting and timely review of current fender design practice.

May I call attention to an error in the sketch of the Raykin Buffer in which the central steel wedge is shown upside down. The reversed direction of the wedge is important to compensate for volume changes in the rubber during deflection.

I also point out the importance of fenders' being able to take longitudinal forces. The Raykin Buffer can safely handle these forces along with the direct forces without jamming.

The problem of handling both large and small ships with the same buffer is under study now. We believe that by making the first pair of rubber sandwiches next to the wedge of relatively soft (low durometer) rubber, the first part of the deflection will be at a lower rate than the remainder of the movement.

It is hoped your article will draw attention to a civil engineering problem that can only be solved through close cooperation between ship operators, ship owners and marine insurance companies.

W. P. KINNEMAN
Raymond International, Inc.
New York, N. Y.

Pay for Professors

SIR—Please allow me a comment on pay of college teachers.

Discussing educational problems in our engineering office recently one of our structural men brought out a back issue of ENR to emphasize a point which some of us brought up.

The point is this: Not only is pay in money low, the "pay" in prestige and standing is even lower. This, your article (ENR Dec. 12, 1957, p. 30) makes clear, but it needs direct emphasis.

Educational work is made unattractive for a great number who could teach for moderate salaries. "Mere teaching" is often a matter of contempt.

If the schools must offer only modest pay in money, they certainly should make their openings inviting and intellectually stimulating to those who are willing to work for the pay they may be able to offer.

J. A. DOUGLAS
Mobile, Ala.

(*Reader Comment continued on p. 8*)

Another **DIETZ** development

NEW

604 SUPER Visi-flash®

HIGHWAY HAZARD WARNING

3 TIMES BRIGHTER

Two-way polished aluminum reflectors plus combination bulls-eye and prism lens concentrate and greatly reinforce brilliance.

Transistorized circuit provides non-mechanical make-and-break, greater durability, dependability and 1500 hours battery life.

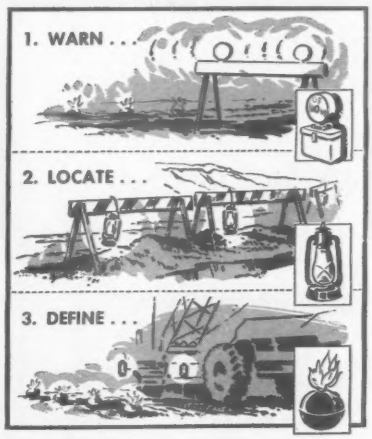
NO. 604

You've asked for it . . . a highway flasher of greater brilliance. And here it is . . . this amazingly more effective version of the tried-and-proven Dietz Visi-Flash . . . the new 604. Same rugged construction! Same size batteries! But LABORATORY PROVED 3 TIMES BRIGHTER than any other barricade flasher. Three times more warning power . . . to jar drivers fully alert and focused for danger.

Intensely brighter flashes carry farther. Light and dark periods so scientifically timed that the flashes are seen as sharp, meaningful warnings. FLASH – darkness – FLASH – darkness – FLASH! An unmistakable warning signal.

DESIGNED TO WARN WITH MAXIMUM EFFECTIVENESS

As a good warning flasher should, the 604 Visi-Flash concentrates the light in a full-faced brilliant beam that is highly visible over the entire width of the road, and is double faced to give protection from either direction.



Adequate lighting may save you thousands in tragedies, bad publicity and law suits. Write for latest authoritative manual on Hazard Warning Lighting. R. E. Dietz Co., 100 Leavenworth Ave., Syracuse, N. Y.

● For adequate safety, hazard warnings should (1) **WARN** of approaching danger by use of flashers and torches; (2) **LOCATE** the hazard by means of lanterns and (3) **DEFINE** and illuminate hazard with torches and lanterns.

Go **DIETZ** *and you go Safely*

Proved Cost Saver

CURE and SEAL CONCRETE WITH 1 PRODUCT

THOMPSON'S WATER SEAL

Eliminates wet sacks, papers, hosing and spraying

Spray deep penetrating, colorless Thompson's Water Seal on fresh concrete to cure and seal in one operation. Save time . . . save labor.

Effectively controls moisture loss for 28 days and beyond.

Assures uniform curing even in hot, dry weather.

Helps reduce checking, cracking, spalling.

Produces harder, dust-free surface.

Eliminates waterproofing concrete floors.

Permits adequate time for smooth troweling.

Send for technical bulletin and Contractors Case History file.

A proved bond breaker for pre-cast, tilt up and lift slab construction. Permits easy, clean separation of slabs, walls, pre-cast members.

Available in 5 and 55 gallon drums from building supply stores, paint and hardware dealers.

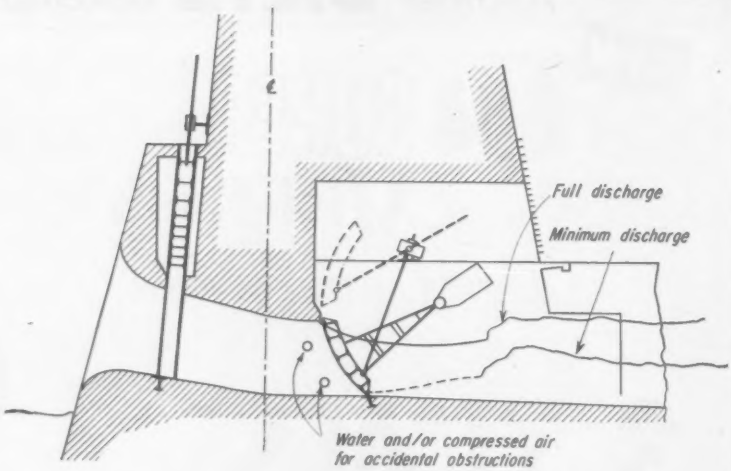
4032

Thompson's

MANUFACTURERS OF FINE PROTECTIVE CHEMICALS SINCE 1929

E. A. Thompson Co., Inc., Merchandise Mart, San Francisco 3, California

San Francisco • Los Angeles • San Diego • Portland • Chicago • Seattle • Denver • Dallas Houston • St. Louis • St. Paul • Detroit • Philadelphia • New York City • Memphis • Cleveland • Factory: King City, California



Is This a Better Method?

SIR—From the author's description in the article "Muck Filled Reservoir Behind 120 Foot Dam Is Cleared (ENR May 15, p. 40), it appears that the sluice gate adopted for mud flushing in the event of future thunderstorms is not best suited to achieve the desired end.

A sluice gate under these conditions (mud, sand, gravel, rocks, etc., in the bottom of the dam) is subjected to unpredictable overloads (sticking of the solids against the gate surface and guides, etc), and also to consequent jamming which creates overstresses in structural and mechanical components.

Theory and practice show that the most adequate solution in similar cases of "bottom discharge" is the assembly of a sector gate downstream, discharging into an open channel, with a sluice gate upstream for safety. The sluice gate should be closed only in the case of repairs to the sector gate.

The sector gate has the advantages of no vertical recessed guides subjected to mud and solid deposits, guidance of the primary flow when starting an opening maneuver, and controlled loads on the structural and mechanical parts.

In my opinion, the installation of an assembly of both sluice and sector gate should have been provided in the Cat Creek Dam, determining at the same time a scheme of periodical bottom discharge with a view to avoiding any possibility of excessive accumulation of solids in the future.

In the field of bottom discharge of reservoirs, the Ets. Neyrpic and the well known Laboratoire Dauphinoise d'Hydraulique of Grenoble, France, have been obtaining very interesting laboratory results and have also a considerable amount of successful experience in full scale applications all over the world.

ZOLTAN PAZMANY
San Diego, Calif.

. . . Good, But Expensive

SIR—I believe Mr. Pazmany's design is an excellent one and we would have employed a similar one if the client could have afforded it. It is obvious that Mr. Pazmany's design would have cost many times the one employed.

An additional control on the design was a prohibition on enlarging the hole through the dam.

A high pressure jetting system was installed at the crown of the sluice pipe to loosen sand, gravel and other debris that may be deposited in the pipe and against the upstream leaf of the square bottom gate valve.

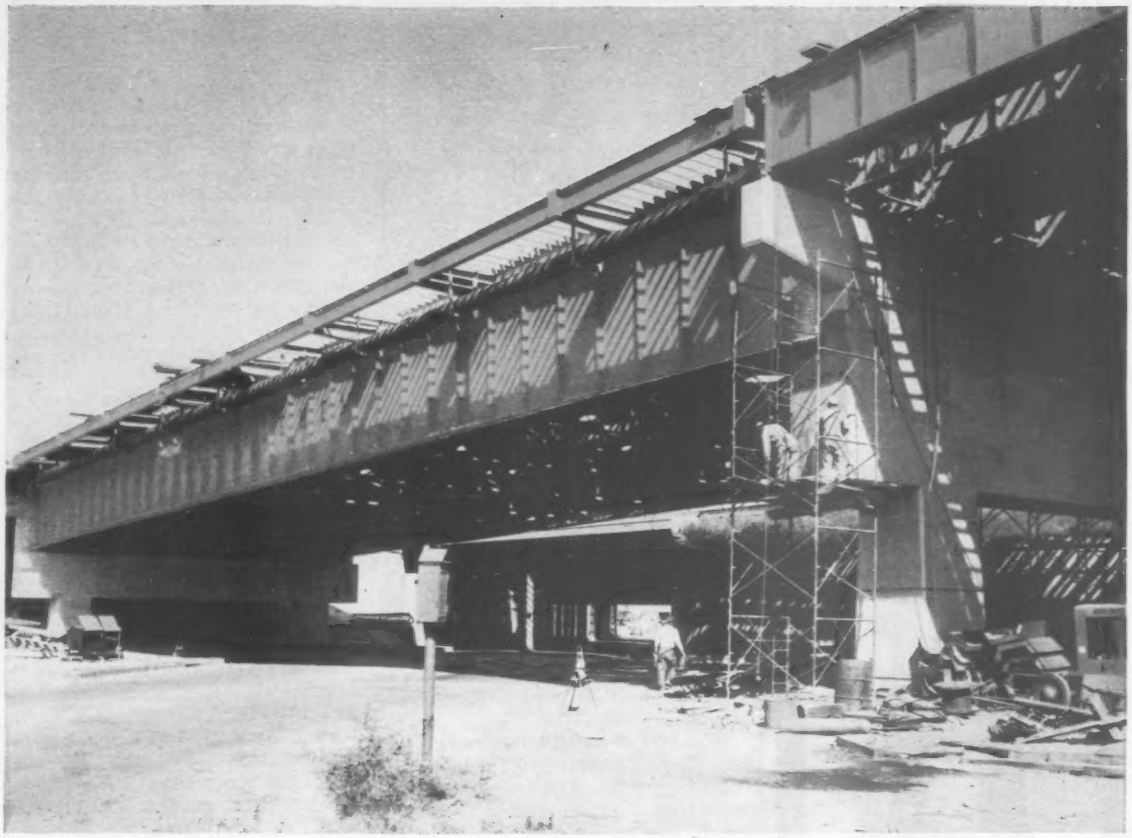
Incidentally, the original article refers to my firm as Robert E. Layton & Associates. Please be advised that the firm name is Raymond E. Layton & Associates.

R. E. LAYTON
R. E. Layton & Associates
San Leandro, Calif.

(Reader Comment continued on p 10)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

look ahead with LEAD



Calumet Skyway Toll Road, the final link in the tollway stretching from New England to New York to Chicago. Engineered by De Leuw, Cather & Co. under the Department of Public Works of the City of Chicago.

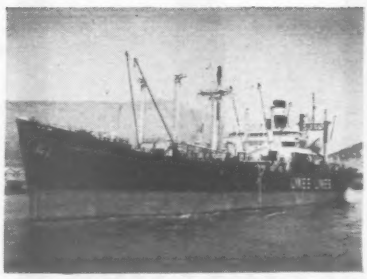
RED LEAD to corrosion-proof New Chicago Super-Skyway

In Chicago, the new 7½ mile Calumet Skyway Toll Road will run for over half its length on steel underpinnings. To make sure this vital foundation stays free from rust and corrosion, Red Lead primer paint has been specified for the entire structure—using American Association of State Highway Officials "specs."

Red Lead protects against atmospheres filled with chemical fumes, against rain and sleet, against almost any kind of creeping disintegration.

That's why 47 out of 48 states have official red lead primer specifications. Throughout the country, Red Lead has proved itself, in action, the standard for all primers.

Red Lead paint is available to meet the most exacting requirements. Quick-drying . . . low cost . . . extreme corrosive and weathering conditions. For unusual problems, Red Lead specialists are available to help you select the correct formulation for your conditions. Just write today.



S. S. Kenneth McKay, shown here in Port of Capetown, South Africa, is primed with Red Lead paint, first choice on land or sea.

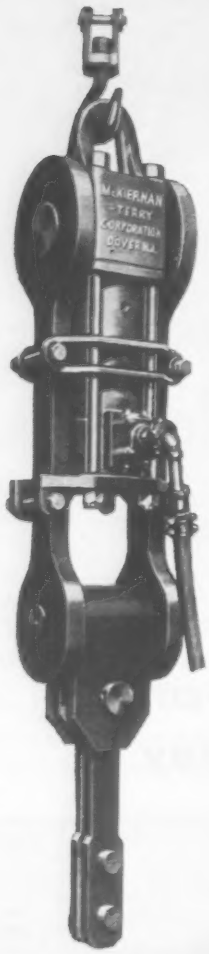
RELY ON RED LEAD—THE STANDARD FOR STEEL PROTECTION

Lead Industries Association

60 East 42nd Street New York 17, N.Y.

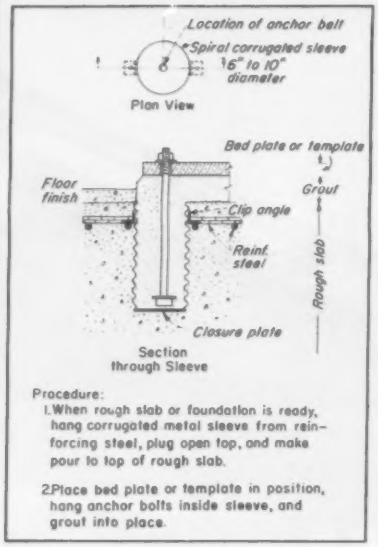
4753

McKIERNAN-TERRY CORP.
80 RICHARDS AVE., DOVER, N. J.



PILE EXTRACTORS

Models E2 and E4, rated for 50- and 100-ton crane pull respectively, provide rapid, low cost extraction of heavy piles from the toughest embedment. Powered by steam or air. Write for Bulletin 58.


Location of anchor bolt
Spiral corrugated sleeve
16" to 10" diameter
Plan View
Bed plate or template
Floor finish
Grout
Clip angle
Reinf. steel
Rough slab
Closure plate
Section through Sleeve
Procedure:
1. When rough slab or foundation is ready, hang corrugated metal sleeve from reinforcing steel, plug open top, and make pour to top of rough slab.
2. Place bed plate or template in position, hang anchor bolts inside sleeve, and grout into place.

More on Anchor Bolts

SIR—To the problem encountered by H. K. Lee relative to Anchor Bolts (ENR May 30, 1957, p. 10) we offer a solution which we deem practical and desirable.

This type of installation is being used in our power plants and was adopted in order to overcome the necessity of having anchor bolts protruding from the rough slab during construction up to the time of setting machinery. Prior to such installation pre-set bolts were often damaged during construction, and had to be modified or replaced, a very expensive operation. In any event, attempts to protect them by platforms and barricades proved to be costly and objectionable.

The idea was suggested by our own engineers and developed by Sargent and Lundy, especially for us.

L. V. SMOOT
Assistant Structural Engineer
General Engineering Dept.
The Cincinnati Gas & Electric Co.
Cincinnati, Ohio

Capitol Dispute

SIR—A number of our members have taken great exception to the unsubstantiated charges contained in the editorial (ENR Apr. 24, p. 136) on the east front of the Capitol. We regard this attempt on the part of your publication to create dissension between our two great professions, through impugning the motives of some of our members, to be most unfortunate.

One has only to check the record to realize how false these charges are. The American Institute of Architects traditionally has opposed east front extension and many of those most active in the current fight to stop it have fought against the proposal for as long as 20 years.

We regret that you have chosen to inject personalities into the current controversy. In maintaining our traditional position we are carrying out the mandate of our convention. The convention affords the membership the opportunity to express itself in a democratic fashion through the delegates selected from each chapter and state association. Policies adopted by the convention are truly representative of the will of the membership.

In supporting S. 2883 we are not attempting to deceive editors or the public. I trust that any further comment you have to make on the subject will be limited to the facts, on which there is honest disagreement, rather than personalities and false accusations.

EDMUND R. PURVES
Executive Director
American Institute of Architects
Washington, D. C.

Editor's Note—The statements in the editorial are based on the record—in particular, on testimony given in the hearings on S. 2883, as well as personal interviews. We, too, regret the interjection of personalities, but we didn't interject them, merely called attention to our discovery that personalities were involved.

Highway Barriers

Sir—The article "Highway Barriers" (ENR May 15, p. 69) states that the findings of Traffic Engineer George M. Webb of the California State Division of Highways indicate that median barriers may not be the whole answer to the collision problem on heavily traveled metropolitan freeways. With this we disagree.

While the point is one about which opinions and arguments will be as varied as the individuals making them, it is extremely important to the traveling public that these reports be kept in their proper perspective.

Using the figures quoted by Mr. Webb, it is apparent that before installation of the median, accidents involving the median strip were 26.3% (167-44) of the total, and injuries involved in such median strip accidents were 33.3% (70-23).

Following installation of median barriers, however, the percentages were reduced to 25.7% (338-87) and 28.5% (179-51), respectively—a reduction in percentages of both accidents and injuries.

While the percentage of all accidents

PAYHAULER FLEET

whips 17% grade with bonus loads

The Caldwell Engineers' five-unit 65 Payhauler® fleet highballs 2,500 cu yd of shot rock 1,000 feet daily up a haul road with 17% average grade. That's how this subcontractor keeps on schedule! His contract calls for excavating and crushing 165,000 tons of rock on the $13,000,000 hydro and flood control Oliver Dam under construction at Columbus, Ga.

Making the 17% grade with bonus loads is routine for the Payhauler fleet on this newest of all dams being built by the Georgia Power Co. at Columbus.

"These are crooked haul roads," reports excavation foreman Dudley Rabb, "but our Payhauler fleet is whipping them to keep us on schedule. The rigs haul through axle-deep water 50% of the time...make pull-outs up roads that rise 170 feet in 1,000 feet...yet speed bonus loads to crusher and stockpile."

Prove the get-away surge, and up to 25% faster haul speed of an International Payhauler—the result of bonus turbo-charged diesel power; road-matched and load-matched gear choice; and the power-cushioning leverage of planetary drive axles.

See how a Payhauler shortens the cycle with pick-up truck spotting ease. Discover how exclusive high reverse, zip-around power steering, and grade-beating power boost your profits. Try split-second dumping with the double-acting hydraulic hoist. Measure the advantage of Payhauler operating ease, and downgrade safety of positive Torqmatic braking! See your International Equipment Distributor for a demonstration!

International® Construction Equipment

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

International® Fleet M

S. J. Groves & Sons o

The Groves' pattern for high-speed earthmoving: two heaped "75" Payscraper units streaking toward the fill; two more loading fast in the cut with TD-24 full-power push-loading assistance, and another pair coming into the cut for quick pick-ups.

D. H. Groves, vice president and project manager, is double-shifting earthmoving operations, shooting for contract completion before Labor Day.

Along
#94 be
earthm
ultima
freewa
In S
Minnea
on a $4
age, a
Interna
fleet, p
crawler
excava
1,900-
Twe
packed
pushers
tact to
decelera
possible
power-s

International®

International Harvester Co.,
180 North Michigan Ave., Chicago 1, Illinois

Construction Equipment

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

Making Dirt Fly for on Wisconsin #94

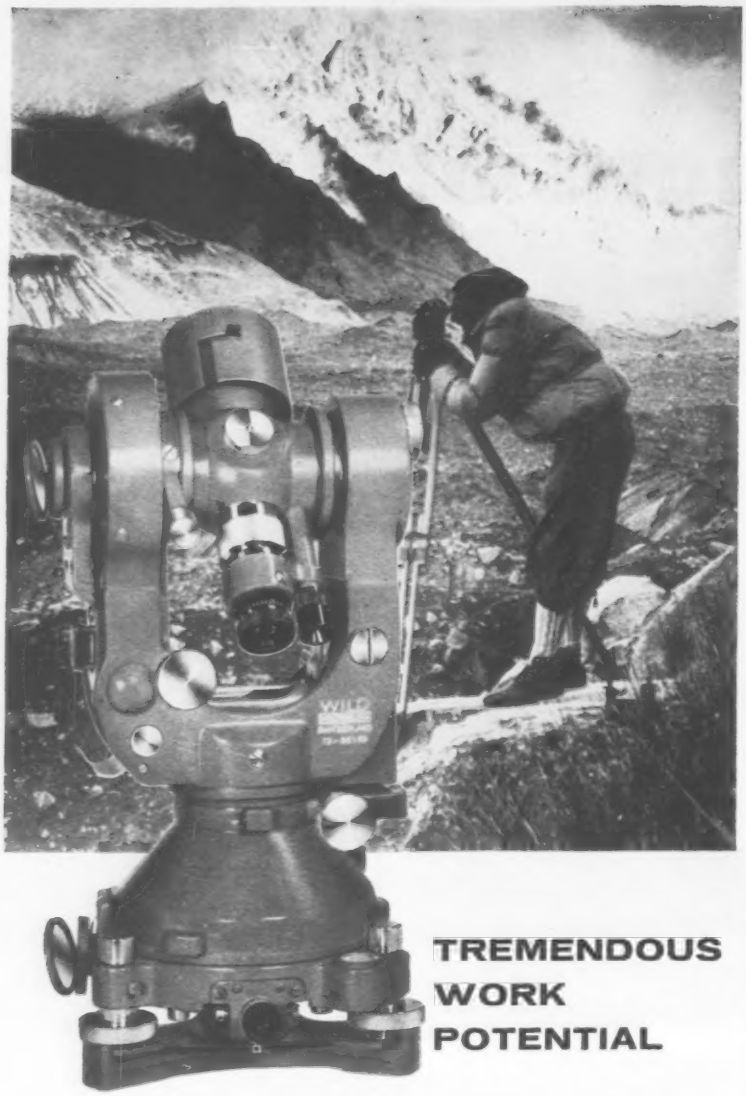
Along 40 miles of Wisconsin Interstate Highway #94 between Menomonie and Hudson, high-speed earthmovers are making the grade for what will ultimately be part of the Chicago-Twin Cities freeway.

In St. Croix County, S. J. Groves & Sons Co., Minneapolis, is highballing a 2.92-mile stretch on a $416,000 prime contract for grading, drainage, and sub-base with more than 70% International equipment. Groves' "75" Payscraper fleet, push-loaded by TD-24 Torque Converter crawlers, is moving 605,000 cu yd of unclassified excavation and 115,000 cu yd of borrow on 1,900-ft average hauls.

Twenty-cu-yd loads of Wisconsin clay are packed into "75" Payscraper bowls by TD-24 pushers that shorten the loading cycle from contact to kick-out. The TD-24 foot-operated engine decelerator makes "feather-touch" pusher contact possible. Exclusive TD-24 Planetary Hi-Lo range power-shifting supplies full power in the cut and speeds scraper kick-outs a gear higher in many cases. And TD-24 pushers save additional cycle time by using exclusive Planet Power steering for faster repositioning and scraper pick-ups.

Payscraper power gets the rigs in and out of cuts fast, provides travel speeds up to 24 mph that rolls paydirt to fills in shorter cycle times. High power-to-weight ratio, load-heaping bowl design, exclusive Hydro-Steer—all help give the Payscraper production-boosting operating ease and safety.

Prove to yourself that an all-International matched scraper-crawler fleet is your best bet to back up your low bids. See how International Payscraper units help get the job done faster at less cost. See how International TD-24 Planet Power steering gives you pusher performance unmatched on your pans. See your International Construction Equipment Distributor for an on-the-job demonstration!



TREMENDOUS WORK POTENTIAL

T-2 UNIVERSAL THEODOLITE

The Wild T-2 enables the operator to work rapidly, precisely and steadily under conditions that may range from equatorial to antarctic.

Optical and mechanical excellence, plus negligible maintenance requirements, combine with a complete list of accessories to make the T-2 the finest instrument in its class by far.

Write or phone for Booklet T-2 for complete data.

Full Factory Services

WILD HEERBRUGG INSTRUMENTS, INC.

MAIN AT COVERT STREET, PORT WASHINGTON, NEW YORK • PORT WASHINGTON 7-4843

involving injuries *did* increase (42% to 53%), the increase could be attributed to *exterior* traffic lane accidents, where drivers fail to signal slow-downs at off-ramps, or where they become impatient and challenge merging traffic at on-ramps.

W. R. BOND
Senior District Engineer
American Wood Preservers Institute
Portland, Ore.

EDITOR'S NOTE—Still, what did cause the increase? The only physical change in the freeway was addition of median barriers. Exterior traffic lanes remained the same, before and after medians were installed.

Bridge Testing

SIR—I'm sure, if it can, the "spirit" of the late J. A. L. Waddell will be present to witness the tests outlined in the article, "Full-scale Test on a Half-scale Bridge" (ENR Jan. 30, 1958, p. 53).

In a letter published in ENR Jan. 16, 1919, under the title, "Are Bridge Engineers Losing Their Heads on Unit Stresses?" (also published in the book "Memoirs and Addresses of Two Decades," by J. A. L. Waddell). Mr. Waddell, famed bridge engineer of his day, suggested that a five-panel riveted truss bridge of "about 100 ft span" be built for testing purposes—preferably at government expense. However, he did not suggest that the bridge be half-scale. Modern precise instrumentation and all the present day objects of the testing, no doubt, would be a revelation to him.

Almost 40 years have passed since Mr. Waddell, in the letter referred to, wrote:

"In view of the immense amount of bridge manufacture and construction that is likely to be done in the United States within the next five or ten years, the making of this proposed series of tests is worthy of being considered of national importance."

Better late than never!

DONALD MACDONALD III
Supervising Construction Engineer
Bureau of Public Roads
Fairbanks, Alaska

CALENDAR

Constructions Specifications, Institute, annual convention, Hotel Cleveland, Cleveland, Ohio, July 5-7.

American Institute of Architects, annual convention, Hotel Cleveland, Cleveland, Ohio, July 7-11.

Expanded Clay and Shale Association, mid-year meeting, Cosmopolitan Hotel, Denver, Colo., July 20-21.

Stretch Dollars – Save Manpower with equipment that does more . . .

WORK BULL 202

DOES MORE JOBS THAN ANY OTHER RIG IN THE UTILITY CLASS!

The Work Bull 202 with its complete line of power-matched attachments is designed and engineered to increase your production and save you money on all types of construction jobs! It enables you to handle stockpiling, loading, materials handling, digging, trenching, clean-up, backfilling, scraping, scarifying, leveling, hauling, cable-laying, mowing – even wood cutting – in the fastest time . . . and all with one power unit! Most attachment changeovers are so simple you can make them quickly in the field.

New Work Bull Industrial Styling features a low silhouette for better over-the-hood visibility. Distinctive bumper-grille is specially designed to facilitate the mounting of a Davis Loader-Backhoe, so the entire rig will operate as a single integrated unit. Built-in hydraulic pump mounting lets you reach farther by eliminating the necessity for a bumper. Heavy-duty front axle and engine support withstand torsional stresses that accompany heavy industrial use.

High-torque, 40-horsepower engine delivers more sure-footed lugging power at low speeds than any other tractor in the utility class! Dual range transmission has in-line shifting through six forward and two reverse speeds. Other Work Bull quality features include full-time power steering, left and right turning brakes, all-weather starting, quick warm-up, pressure-lubricated engine, safety-starter, pressurized cooling system, and extra-large fuel tank for once-a-day filling.

Other Power-Matched Massey-Ferguson Rigs are the Work Bull 1001 Multi-Purpose Tractor Loader (60.3 h. p.), Work Bull 303 Tractor (54.5 h. p.), Work Bull Fork Lift, and Davis Loader and Backhoe . . . plus a multitude of integrated attachments for each basic unit.

For information on the complete Massey-Ferguson Industrial Line ask for Brochure G-4. For specific information on the Work Bull 202 ask for Brochure W-2. Write *Massey-Ferguson Industrial Division, 1009 South West Street, Wichita 13N, Kansas.*

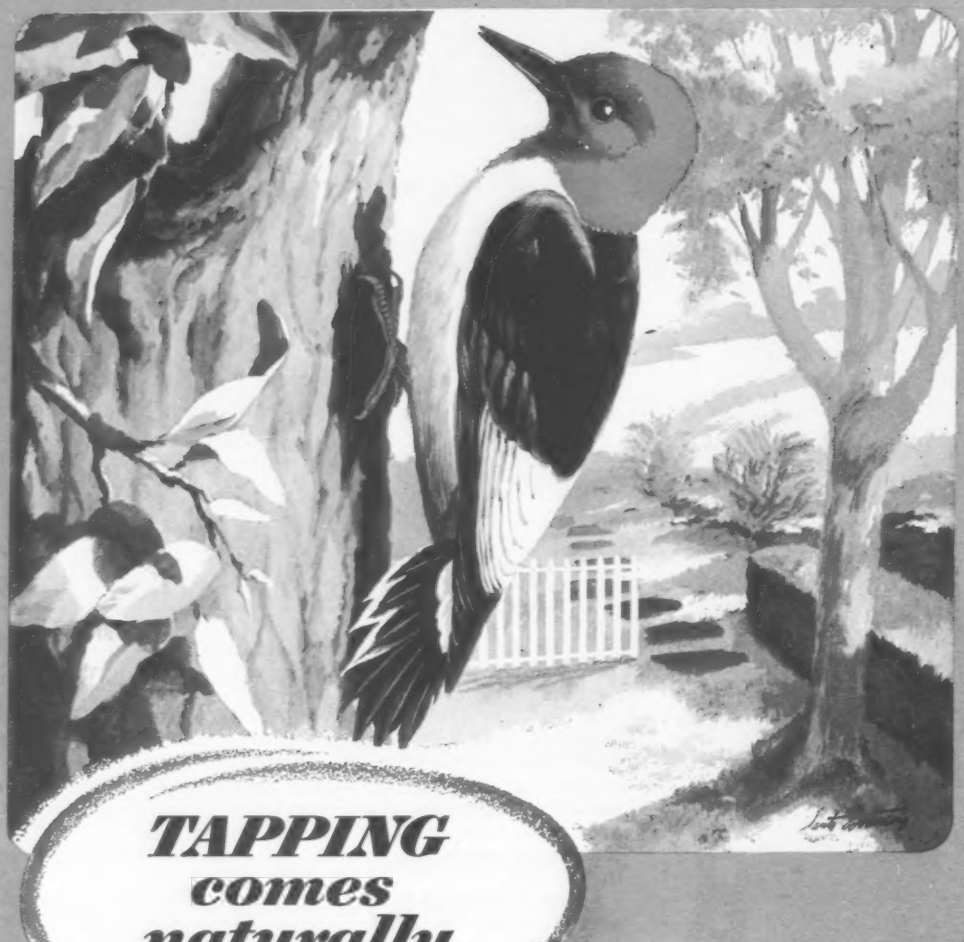
Davis Backhoe on Work Bull 202 digs flush alongside obstructions, lets you load directly into trucks.

Work Bull 202 is the only industrial tractor with Ferguson 3-point hook-up for rear end attachments.

Work Bull 1001 Multi-Purpose Tractor Loader is convertible into eight machines. Instant reverse.

MASSEY-FERGUSON INDUSTRIAL DIVISION

LOCK JOINT ECONOMIES—One of a Series



TAPPING comes naturally

Tapping that involves no "bugs" may mean frustration to the woodpecker, but it spells economy and efficiency to the water works operator. This type of tapping comes naturally with Lock Joint Concrete Pressure Pipe.

Modern tapping equipment and technique have made the tapping of Lock Joint Concrete Pressure Pipe a simple, speedy operation. Small outlets for service connections, or larger ones for take-offs or cross connections, may be made under pressure with no danger of cross-threading or splitting the pipe.

Thousands of such pressure taps made in the field on Lock Joint Concrete Pressure Pipe attest to the reliability of an operation which, in no case, ever caused damage to the pipe being tapped.

LOCK JOINT PIPE CO.

East Orange, New Jersey

Sales Offices: Chicago, Ill. • Columbia, S. C. • Denver, Col. • Detroit, Mich. • Hartford, Conn. • Kansas City, Mo. • Perryman, Md.

Pressure • Water • Sewer • REINFORCED CONCRETE PIPE • Culvert • Subaqueous

ENGINEERING NEWS-RECORD

Vol. 161, No. 1 July 3, 1958

Number of copies printed this issue 82,760

CONTENTS

NATIONAL AFFAIRS

ASCE Hears Call for Unity 21
Bomarc Construction Adds $170 Million 24
ASTM Eyes Cheaper Bridge Steel 25
How States Treat Road Work 26
U. S. Water Policy Is Upheld 26
"Industrial" Channel Proposed on Delaware .. 27
Four Contractors Named for Bay Crossing 27
Should Design Esthetics Be Regulated? 27
Water Planning Moves Ahead 27
Sacramento Channel Lock Bids Opened 28
Bridge Burns When Oil Tanker Sinks 28

FEATURES

Height Record for Lift Slabs Goes Up 30
Jacks Erect Steel Surge Tower 35
Chicago Makes Plans for the Jet Age 40
Are You Interested in Working Overseas? 45
Apartments Built Over a Highway 54

FIELD AND OFFICE

Insulated Forms Protect Winter Pour 56

INTERNATIONAL

Landslide Cuts Swedish Canal 58
Girders Span Building Width 59
Spanish Dam to Impound 150 Million Acre-ft ... 59
Site Picked for British Nuclear Power Plant 59

NEW PRODUCTS

Paver Uses Bucket Spreader 60
Bottom Dump Units Are Light and Strong 61
Hydraulic Pump Is Activated by Air 61

MEN AND JOBS

Kenneth B. Woods: New ASTM President 62

USINESS AND FINANCE

Bias Laws Put Homebuilders on Spot 82
Jet-Propelled Boom for Construction 83
U. S. Construction Abroad Is Criticized 84
Buffalo Port Improvements Proposed 84

LABOR

Long-Term Pacts Still Popular 86
Legal Hiring Hall Is a Paradox 87

Reader Comment .. 6 | Unit Prices 66
Calendar ..... 14 | Materials Prices ... 69
Washington Observer 19 | Construction Reports 70
Obituaries ..... 65 | Scoreboard 81
Editorials 100

ENGINEERING NEWS-RECORD is a consolidation of Engineering News and Engineering Record, effected in 1917. The Contractor was consolidated with ENGINEERING NEWS-RECORD in 1918. Engineering News was founded in 1874 as The Engineer and Surveyor, which subsequently became The Engineer, Architect and Surveyor, Engineering News and American Railway Journal, and finally Engineering News. Engineering Record was established in 1877, as the Plumber and Sanitary Engineer. Subsequently it became The Sanitary Engineer, Engineering and Building Record, and, finally, Engineering Record.

All rights to the above titles are reserved.

THE CONSTRUCTION WEEK

Spotlight on Steel . . .

. . . PRICES GOING UP?—Wage boosts to steelworkers this week laid the groundwork for another increase in steel prices. Estimated cost to producers is 20 cents an hour—same amount that pushed prices up $6 a ton last year. Around Pittsburgh consensus is for another hike of $6 some time in July—or whenever U. S. Steel feels like moving. U. S. Steel says it won't change prices "until the situation clarifies itself" and adds, the increased costs "cannot possibly be offset."

. . . PRODUCERS WANT MORE CONSTRUCTION BUSINESS—Some basic steel companies that produce only a limited line of products for the construction industry are trying to figure out how to get greater penetration. Reason: Construction's relatively good record during the last three recessions. The only three steel companies that will earn their dividends in the second quarter are all selling heavily to construction—in structurals, bars, pipe and plate.

GINGERBREAD HAS TO GO—Owners of some 1,000 old buildings in Detroit are going to have to pull down cornices or prove to city building officials that the overhanging ledges are safe. The order went out after a window shopper was killed by a falling chunk of sandstone cornice.

VICTORY FOR METAL WALLS—Philadelphia's City Council voted 15 to 2 last week to permit the use of metal wall panels without masonry backup. The action throws out a building code provision requiring that nonbearing metal wall panels be backed up by masonry with a four-hour rating. It was backed by architect and engineer groups, and city and state building officials.

FIRST BRIDGE CONTRACT—First major contract for a $182 million six-lane lower deck and improved approaches for the George Washington Bridge has been awarded by the Port of New York Authority. The bridge connects upper Manhattan with New Jersey. A $13.6 million contract for furnishing and erecting 13,875 tons of structural steel for the second deck went to the low bidder, Bethlehem Steel Co. The new deck will be attached to steel connecting plates provided for that purpose when the 27-year-old bridge was first built.

TRUCKER EXEMPT FROM ZONING—An Ohio court has ruled that Freight, Inc., is a public utility and is free to build a disputed terminal near Akron despite area zoning laws prohibiting the building.

Why SHOULDN'T I be interested in key man insurance?

"This is for sure . . . the brains of my key men are my biggest business asset."

Almost every company has one or more key men who are responsible for its growth and continuing success. If death takes one of these men, the company stands to lose money . . . at least until a replacement can be found and trained.

You can avoid such a loss through Ætna Life's Key Man Insurance Plan. This plan provides the ideal method of protecting the *living value* of the important men in your business. It gives you the money you will need . . . *when* you need it . . . in the period of adjustment and replacement.

And during the lives of key men, the insurance has important cash values, giving you larger lines of credit and lower rates of interest.

Thoroughly trained representatives in 91 agencies from coast to coast are ready to offer you this unusual Ætna Life Business Planning Service.

ÆTNA BUSINESS LIFE INSURANCE PLANS ARE SPECIALLY DESIGNED . . .

- To preserve PARTNERSHIP value when death comes to any partner.
- To preserve SOLE PROPRIETORSHIPS for heirs or selected employees.
- To preserve ownership values when death comes to any stockholder in a CLOSE CORPORATION.
- To indemnify any firm for the death of a KEY MAN.

Add Life to your Business with Ætna Business Life Insurance

ÆTNA LIFE
INSURANCE COMPANY

Affiliates:
ÆTNA CASUALTY AND SURETY COMPANY
STANDARD FIRE INSURANCE COMPANY
Hartford, Conn.

Ætna Life Insurance Company
Hartford 15, Connecticut

Gentlemen:
Please send me a copy of your new business life insurance booklet "Will This Man Take Your Business With Him When He Dies?"

Name_____

Address_____

_____

WASHINGTON OBSERVER

- **Washington sees a cheerful new fiscal year**
- **New agency to handle civilian stockpiling**
- **Spectacular Oahe closure starts**
- **Carpenter officials under fire**

• **This is a new year in Washington—fiscally and psychologically. Most government officials see a better year ahead;** they are relieved that most of the bad occurred in the last six months, and they look forward with optimism.

Increased government spending, in construction particularly, will stimulate the sluggish economy. Turnabout in spending policies has yet to make its big impact, but programs such as airbase dispersal, missile base construction and public works expansion will bring the outlay totals up significantly.

The housing upturn is here—and will continue. Best guess now is that from 1.1 to 1.2 million homes will be started this year. Starts in May were running at an annual rate of 1,010,000. That's higher than at any time since the first half of 1957.

Unemployment will decline. Experts who had feared a 6 million total, now say "not a chance."

Gross national product—a primary barometer—turned up slightly in the second quarter of this calendar year; now estimates are that the figure will rise steadily from the first-quarter low of $422 billion annual rate, to $440 billion in the April-June quarter of 1959.

• **The new Office of Defense and Civilian Mobilization will handle a major program for stockpiling civilian materials and equipment for survival in case of an atomic attack.** The Administration is now going over ideas for stockpiling building materials, sanitary and water equipment, construction vehicles and the like—to be used for digging out and surviving after an attack.

The new agency is a merger of the Office of Defense Mobilization and the Federal Civil Defense Administration.

• **The Corps of Engineers and its contractors this week began narrowing the gap through Oahe Dam** in preparation for the spectacular final closure scheduled for a 24 hour period late this month. The big day probably will see the largest amount of earthmoving equipment ever amassed in one place. It will be used to stop the Missouri River in its tracks near Pierre, S. D. "Eucnik," a dump truck capable of carrying a 120 ton load at 35 mph, will be used on the Oahe closure.

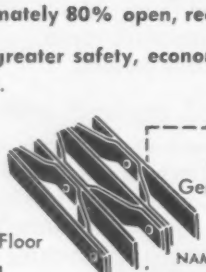
• **AFL-CIO clean-up men aren't taking kindly to appearance of carpenters president Maurice Hutcheson before the McClellan labor racket investigating committee.** Mr. Hutcheson refused to testify on whether he used union funds to fix a grand jury that refused to indict him on an Indiana conspiracy case. He protested questioning because of a current indictment by a second grand jury against the top carpenter officer on a right-of-way land deal in Indiana.

The AFL-CIO Ethical Practices Committee probably won't act until indictment is processed. His case will be on the agenda at the August AFL-CIO Executive Council meeting.

BORDEN MANUFACTURES EVERY TYPE FLOOR GRATING

IN FERROUS AND NON-FERROUS METALS

- **EASY TO INSTALL** – engineered in conveniently sized units for easy installation.
- **EXTRA STRONG** – reinforced, designed with maximum safety factor.
- **LIGHT WEIGHT** – approximately 80% open, reduces dead weight, allows greater live load.
- **SELF-CLEANING** – creates greater safety, economy of maintenance, no sweeping or washing required.



Write for complete information on BORDEN All/Weld, Pressure Locked, and Riveted Floor Gratings in this FREE 16-page catalog

BORDEN METAL PRODUCTS CO.

815 GREEN LANE Elizabeth 2-6410 ELIZABETH, N. J.
SOUTHERN PLANT—LEEDS, ALA. — MAIN PLANT—UNION, N. J.

BORDEN METAL PRODUCTS CO.

Gentlemen:

Please send me BORDEN Catalog

NAME .....

TITLE .....

COMPANY NAME .....

ST. AND NO. .....

CITY AND STATE .....

ASCE hears call for action . . .

Bigger Role Urged for EJC

Rockfill dams and timber design held the center of technical interest at the American Society of Civil Engineers convention in Portland, Ore., last week. The outstanding subject in the professional realm was unity among the nation's engineering societies.

Louis R. Howson, consulting engineer, Chicago, and president of ASCE, announced that the Board of Direction had selected Francis S. Friel, consulting engineer, Philadelphia, to be the official nominee for president for a one-year term beginning in October.

More than 700 ASCE members present heard some 130 papers—17 of them on rockfill dams and 16 on timber structures.

• **Professional unity**—Both in the Board of Direction and the convention sessions, the society gave new force and direction to its declared support of Engineers Joint Council as the best instrument for achieving professional unity. Most important development in this respect was the board's action favoring and urging that Engineers Council for Professional Development be made an integral part of EJC at the earliest practicable moment. But of equal interest, if not of such immediate import, was a convention session arranged by the society's Department of Conditions of Practice on the subject of unity. T. Carr Forrest, consulting engineer, Dallas, and Mason G. Lockwood, consulting engineer, Houston, were the principal speakers.

Mr. Forrest said that the ultimate organization must await development of greater professional pride on the part of the individual engineer—"a consciousness of his responsibility to the profession." The least admissible evidence of this responsibility, Mr. Forrest said, is for every engineer to seek registration.

• **Mr. Lockwood proposes**—What may become known as the Lockwood Plan to develop EJC as the profession's overall unity organization emerged from Mason Lockwood's address. He recommended that:

- ECPD merge with EJC.
- The National Society of Professional Engineers join EJC "to continue its work and rapid growth under the common banner of a coordinating agency that NSPE helps to direct."
- EJC be provided with sufficient funds to accomplish its coordinating mission by having its supporting societies arrange to increase their per-member subscriptions 50% each year for a period of four years.
- EJC's board members be appointed from more geographically dispersed areas than at present.
- EJC take steps to become better known through such activities as regional meetings, staff travel and more public relations work.
- EJC change its name to "The American Engineering Association."

Mr. Lockwood believes that greatest immediate progress would ensue if EJC were adequately financed and if NSPE could be persuaded to join EJC as a constituent member, along with the 11 national societies that now have this status.

• **Disunity being taught?**—Another angle of the unity problem was introduced by F. G. Lindall, chairman of the division of engineering of California Institute of Technology and president, American Society for Engineering Education. He said, "The lack of a feeling of unity among engineers begins in college with the influence of professors who deliberately make certain branches of engineering seem different from others."

Professor Lindall urged that engineers and their societies not make the professor's job more difficult by accentuating imagined differences, and particularly by insisting that the many new subjects being stimulated by technological advances be assigned to some specific branch of engineering.

The business of a university is to teach principles. And these are largely common to all branches, he said.

Engineering education and the professor's problems in making it more effective also were discussed by two other speakers. Prof. Elbert Rice, University of Alaska, argued against the necessity of adding general cultural courses to the engineering curriculum. He cited surveys that show engineering students rate higher in cultural knowledge and appreciation than those who take liberal arts courses. Engineers, he said, should not have inferiority complexes about their cultural knowledge.

Prof. Jack McKee, California Institute of Technology, argued against similar self-pity by engineering professors, particularly about their pay. He contended that earnings of engineering professors, which usually include outside consulting fees, are reasonably high. He urged more opportunities for supplemental earnings, not competitive with private industry, so professors will have enough enthusiasm to attract capable students to careers as engineering teachers.

(*Continued on page 22*)

Friel Is Next ASCE President

The nominating committee of ASCE's Board of Direction has named Francis S. Friel as the 40,000-member society's next president. Mr. Friel is completing a term as an ASCE vice president.

He is president of Albright & Friel, Inc., a firm doing design and construction supervision on sanitary engineering and other types of projects. He heads the U. S. Executive Committee which will play host to the International Commission on Large Dams in New York City in September. He is a past president of the American Institute of Consulting Engineers and the Federation of Sewage & Industrial Wastes Association.

. . Rock and timber dominate technical talk at

1 Rockfill dams go higher

The five-session, 17 paper rockfill dam symposium at ASCE's Portland convention was probably the most comprehensive exchange of information on this subject in civil engineering history. It largely aimed at providing information on performance, leakage, settlement and the like.

But the symposium also provided valuable and useful information on application of various rockfill types. Example: The concrete-faced type can be used where impervious fill is scarce or unobtainable and where the reservoir is routinely drawn down to provide opportunity for inspection; the sloping core type can be used in a variety of applications; the vertical core type is called for in higher structures and where impervious fill might be as cheap to develop and place as rock.

Even with extensive sluicing of the rock as it is placed (which helps develop point-to-point rock contact and washes fines down into the mass of the dam) settlement of rockfills must be expected. This was shown in a paper on the concrete-faced Salt Springs Dam, and other Pacific Gas & Electric Co. dams in California, by J. C. Steele, San Francisco consulting engineer. Maximum settlement has been 5.75 ft in a direction normal to the face. Even so, maintenance costs on the 328 ft high, 27-year-old structure have amounted to only $8,000 a year.

• **The newest dams**—Design improvements on concrete-faced rock dams were discussed in papers on two structures completed in the last few weeks—the 380 ft high Paradela Dam in Portugal and the 270 ft high Wishon Dam in California.

Paradela Dam—highest of its type—was built for Hidro Eletrica do Cavado in northern Portugal. It was described by N. Dev. Porto of that agency. It was built at a site not suitable for a concrete dam where impervious fill was expensive to develop. Design improvements include special attention to expansion joint details in the face slab.

Wishon Dam, owned by PG&E was described by J. Barry Cooke of that firm. Its most important design improvements from a cost standpoint are its thinner layer of placed rock, steeper upstream face and less rigid placed rock specification (ENR Aug. 29, 1957, p. 38).

• **Sloping core rockfills**—Remarkable service record of Nantahala and other sloping impervious-core rockfill dams of Alcoa was described by James P. Growden, consulting engineer of Pittsburgh. Mr. Growden is credited with developing the sloping core type with Nantahala, first to be built and the first of seven built for Alcoa. Built in 1942 in North Carolina, the 250 ft high, 2,265,000 cu yd Nantahala Dam has had vertical settlement of only 2.85 ft. And its leakage has been limited to 36 gpm. But perhaps the most remarkable feature is that there have been no repairs or maintenance to the structure in its 16-year history.

• **They grow bigger**—Newest and biggest sloping core rockfill, Idaho Power Co.'s Brownlee on the Snake River (see photo), was described by Torald Mundal of International Engineering Co., Inc., San Francisco (ENR Feb. 7, 1957, p. 46).

This 400 ft high, 7,481,000 cu yd structure will be completed in July. Although the sloping core of Brownlee goes to bedrock, the downstream dumped rockfill is built on 110 ft of undisturbed sand, gravel and boulder.

The highest rockfills have vertical—

at ASCE convention

rather than sloping—central cores. One of the highest in existence is the 400 ft high Mud Mountain Dam, a flood control structure in Washington.

According to A. S. Cary of the Seattle District, Corps of Engineers, Mud Mountain Reservoir has never been filled since completion in 1941. Even so, there has been cracking at the top in the transition section between the core and shell due to greater shell settlement. Similar cracking has been noted at three TVA central core rockfill dams, according to George K. Leonard, TVA's chief engineer.

Two vertical core rockfills in the planning and early construction stages will approach 450 ft. One is Cougar Dam in Oregon, described by Paul Thurber of the Portland District, Corps of Engineers. The other is Derbendi Khan in Iraq (ENR Dec. 26, 1957, p. 32), described by Keith Willey of Harza Engineering Co., Chicago.

2 Timber structures get longer

Design and construction of timber structures was the subject of the other major symposium held at the Portland ASCE convention.

Discussions started with fundamentals of allowable stresses. Pyman D. Wood of the U.S. Forest Products Laboratory, Madison, Wis., pointed out that allowable stresses are so pegged that the average timber has a factor of safety of 2¼ for long-time loading and 4 for a short-time loading. J. D. Snodgrass of the Forest Products Research Center, Corvallis, Ore., introduced a statistical approach to working stresses, aimed at nonstress grade lumber.

The many design standards that exist for timber structures were described by Robert E. Eby of Rilco Laminated Products, Inc., St. Paul.

Of particular value are the American Institute of Timber Construction standards and the handbook, Technical Data on Plywood published by Douglas Fir Plywood Association, he said.

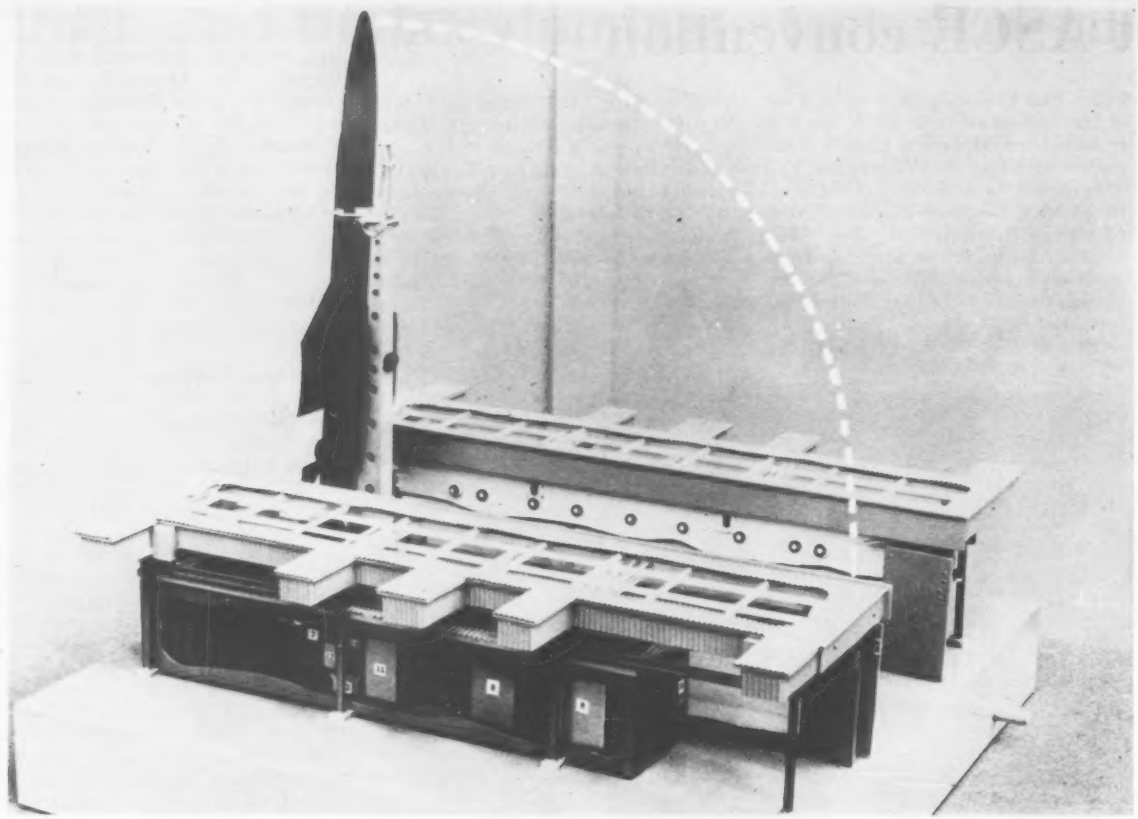
Basic design considerations were discussed by Henry J. Degenkolb, San Francisco consulting engineer, in a paper on pitched and curved timber diaphragms. Mr. Degenkolb said the strength of a timber diaphragm depends largely on the strength and efficiency of boundary details. Further, boundary stresses exist at any break in the sheathing and should be provided for. Diaphragms over bowstring trusses differ little from plane structures where stresses are concerned. But where the prismatic section of a diaphragm is broken at end walls high stresses exist and must be provided for.

• **Pole-form building**—One of the latest timber engineering innovations in the industrial field was described by C. Miles Burpee of American Wood Preservers Institute in a paper on pressure preserved wood for permanent structures. Mr. Burpee referred to a pole-form building for which treated poles are sunk directly in the ground. He cited the Baltimore livestock auction market that withstood a 100 mph hurricane without damage even though many other structures nearby were demolished.

Construction precautions were cited by Cedric H. Anderson of Timber Structures Inc. of California who described several construction failures of timber trusses. Mr. Anderson said the failures could have been prevented by promptly placing all struts and bracing called for before installing rafters and purlins. And rafters or sheathing must not be placed on the trusses in concentrated loads exceeding 5% of the maximum upper chord stress, according to Mr. Anderson.

Maximum spans used on arches, trusses and beams were discussed by Frank H. Hanrahan of the American Institute of Timber Construction. According to Speaker Hanrahan, bowstring trusses have been constructed economically with spans up to 250 ft. Longest glued laminated member to date has been 300 ft, but Mr. Hanrahan said the practical limit for glued laminated members is not known. It's limited only by transportation facilities.

A timber box structure 360 ft long was described by Guy H. Taylor of Moffatt, Nichol & Taylor, Portland consulting engineers. The structure is the Portland Exposition recreation center which is soon to be built. The building will be 360 ft square with the roof supported on four columns 45 ft from the edge. Primary elements are delta girders 30 ft wide. They are made up of web boards laid in two layers opposing each other at 45 deg angles. The girders contain glued laminated timber flanges both top and bottom on each side of the web with solid timber stiffeners as required by vertical shear in the girder.



Two-piece roof slides open so missile can swing into firing position.

Bomarc: $170 Million Construction Job

Construction of launching facilities for the Air Force's Bomarc ground-to-air defense system is getting under way—and before present plans are completed, the bill will add up to some $170 million.

An appropriation now going through Congress for fiscal 1959 will provide about $122 million for the physical plant needed at 10 locations to house and launch the 250 mile range missile.

Last year, Congress made $46 million available for construction of 56 installations at four sites and this work is in progress.

Within the next few months, the Air Force and its construction agency, the Army Corps of Engineers, will call for bids on work at the new sites (see table at right).

The Air Force now has five operating units for launching Bomarc. One of these is a test installation at Patrick AFB in Florida. The other four are being used for training purposes at Eglin AFB in Florida.

However, there is little, if any, resemblance between the existing structures and those now being built or planned. The original buildings are of lightweight construction, and consist of two halves hinged at the back. It's supported by gantries on curved tracks. When a hydraulic launching mechanism is activated, the building splits apart at the front, pivots on its rear hinge, and opens sideways much like an up-ended clamshell.

The new structures have a simplified design and are smaller—about 60 ft long, 42 ft wide, 13 ft high. They are made of concrete block and remain in a fixed position. Only the roof moves. It's built in two sections, supported by gantries. To permit launching of a missile, two roof sections move apart horizontally (see picture). About 18 ft clearance between the roof sections is needed by the missile.

Erection of the missile buildings themselves is only a small part of the over-all picture. Fuel storage and transmission facilities, equipment to take care of compressed air and helium requirements, and equipment for environmental control—air conditioning with humidity and temperature control—are a major part of the projects.

Completion time for a full Bomarc installation is set at 15 to 18 months. However, the contract schedules call for completion of certain phases of the work within 12 months. This will enable technical crews to install control equipment and electronic gear within the time limit.

Bomarc is an antiaircraft, antimissile missile. It's a supersonic, pilotless machine, 47 ft long and 3 ft in diameter. It has an 18 ft wing span and a take-off weight of 15,000 lb. Rocket launched, it cruises on twin jet engines, can be equipped with either conventional or atomic warheads.

Here Are the Bomarc Bases to Be Advertised:

Location	Est. Cost (in millions)
Near Langley AFB, Va.	$13.5
Kinross AFB, Mich.	13.5
Near Niagara Falls, N. Y. Airport	13.5
Near Truax Field, Wis.	13.5
Near Duluth, Minn., Airport	13.5
Ethan Allen AFB, Vt.	13.5
Paine AFB, Wash.	10.0
Camp Adair, Ore.	10.0
Travis AFB, Calif.	10.0
Cooke AFB, Calif.	10.0

ASTM Eyes Cheaper Bridge Steel

Cheaper high-strength steel, new soil and soil-cement tests and concrete for radiation shielding figured high on the string of construction topics taken up by the American Society for Testing Materials in Boston last week. It was the organization's 61st annual meeting.

Recession talk of the last few months has done nothing to dampen the enthusiasm of the nation's materials experts. Nearly 3,000 of them converged on the city, many with sightseeing and shopping wives in tow. In ASTM tradition, the members kept things humming in two hotels and overflowed into a third with eight technical sessions, 11 symposiums, five luncheons and more than 800 committee meetings.

• **Cheaper high-strength steel**—A new standard for high-strength intermediate grade manganese steel for structural purposes was approved by Subcommittee II of Committee A-1 on Steel. Compared to the alloy covered by ASTM Standard A242, the new alloy would have similar yield strength and other strength properties. But it would be less weldable and cost less. For many jobs it would serve as well as the more expensive steel.

Other action in Committee A-1 included submission by Subcommittee V of a proposed tentative for high-strength billet steel reinforcement bars and consideration by this subcommittee of new nomenclature for bar steel grades. The new bars have a minimum yield strength of 75,000 psi and a minimum ultimate strength in tension of 100,000 psi.

The new grade name system would substitute the letters "B," "R" or "A" for the words "billet," "rail" or "axle," respectively; and the appropriate letter would be followed by the minimum yield stress in kips. Thus, after ASTM Standard A15 (Billet Steel Bars for Concrete Reinforcement) had been revised to incorporate the new designations, structural grade (minimum yield stress 33,000 psi) would become B33, and intermediate grade would become B40.

• **Cement content of wet mix**—A number of significant projects on concrete and aggregates were taken up by the subcommittees of Committee C-9. Almost ready by IIIc is a standard centrifuge method for testing the cement content of fresh concrete. A test method approved by Subcommittee IIb measures how effectively a pozzolan hinders concrete expansion caused by alkali aggregate reactions. A new specification for cotton curing mats was approved by IIIg. This subcommittee also completely revised the standard on curing paper to take reflectance into account.

Standards on fly ash as a pozzolan and on accelerators and retarders are almost ready in Subcommittee IIIh of C-9. The word "hardening" is about to be banshed by IIIn in favor of "setting," a condition defined by the subcommittee in terms of resistance to penetration in a needle test. Initial set has occurred when resistance is 500 psi, final set at 4,000 psi.

A standard for dry packaged mixes containing lightweight aggregates is under study by Subcommittee IIIq of C-9 to supplement an existing standard covering mixes with ordinary aggregates. Reduction of plant mixing time for big batches is being contemplated by IIIi (mixing in transit). Some data indicate to this group that the lengthy big-batch mixing times now required—based on specifications written when the biggest mixers were smaller than they are today—work an unjustified hardship. Certification of batches at the plant is another topic being studied by IIIi. Concrete strength is specified according to statistical data in a new method in preparation by Subcommittee IIa. This specification is designed to supplant the type in which a minimum strength is set for the poorest test specimen.

• **Nuclear-shield concrete**—An *ad hoc* committee on concrete for radiation shielding recommended to C-9 that a permanent subcommittee on the subject be established. The new group will start by trying to determine what standards are needed in the field of high-density concrete and aggregates.

• **New soil tests**—Committee D-18 on Soils for Engineering Purposes and D-4 on Road and Paving Materials jointly recommended adoption of three new tentatives on soil testing, and D-18 received from subcommittees proposals for new soil-cement tests and new soil-dynamics nomenclature.

The new tentatives are a method for relating moisture content of soil to penetration resistance, the sand-cone method of measuring in place density of soil, and a method developed by the Corps of Engineers for determining moisture density relationship using a 10 lb hammer and an 18 in. drop.

Soil-cement test standards approved by Subcommittee R8 (construction control tests) and sent to D-18 cover the making and curing of compression and bending specimens, determination of bending strength, and determination of compression strength of cylinders and parts of broken test beams.

A universal classification system for soils is the preoccupation of Subcommittee R7 of D-18. Some elements of what this group hopes to accomplish are incorporated in D-18's major two-year effort—now being printed—"Soil Testing Procedures," 500-plus pages.

• **Highway engineer named head**—Kenneth B. Woods, head of Purdue University's civil engineering school and director of the university's Joint Highway Research Project, moved up to the presidency of the 9,400 member organization (see profile, p. 62). He took over from outgoing president Richard T. Kropf, of New York City.

Frank L. LaQue, vice president and manager, Development and Research Division, International Nickel Co., Inc., New York City, moved up from junior to senior vice president of the society. He was succeeded in the junior post by A. Allan Bates, vice president of Research and Development, Portland Cement Association.

• **Awards granted**—Donald M. Burmister, professor of civil engineering at Columbia University, New York City, received the C. A. Hogentogler Award, for his paper on "Application of Environmental Testing of Soils." Tien S. Chang and Prof. Clyde E. Kesler, both of the University of Illinois, received the Sanford E. Thompson Award for their paper on "Correlation of Sonic Properties of Concrete with Creep and Relaxation." F. R. Owens, of Cyrus William Rice & Co., Inc., Pittsburgh, received the Max Hecht Award for outstanding work in the field of industrial water.

Man-Made River Island Will Carry Powerline

The Niagara Mohawk Power Co. is putting the finishing touches on an 85 ft dia man-made island in the Niagara River to support a 264 ft high tower for a power transmission line.

The island is located a mile above the falls and is rimmed with intrusion concrete to withstand river currents of 8 mph and winter ice packs moving at 10 mph. The foundations of the island rest on bed rock 15 ft below the river bed. The island's surface will be 10 ft above water level.

Except for its size, the island is similar to three others made by Niagara Mohawk for the same purpose. The others are only 43 ft in diameter. The new tower's big base will allow greater tension and less sag in the transmission cables.

BPR survey shows . . .

How States Handle Road Work

The Bureau of Public Roads is hitting a new area in surveys that provides an over-all picture of state highway procedures on federal-aid road jobs. BPR expects to make a series of surveys; the first covers 1957.

Here are some of the results:

• **Contractor competition**—All states but one report more and more qualified contractors are entering the highway construction field. The increase ranges from 5% to 50%, averaging about 20%.

There'll be still more contractors in the future.

Many contractors appear to be enlarging their capacities to handle more or larger contracts.

• **Bidding practices**—More than half the states occasionally solicit bids separately for parts of a project, such as bridges, grading and paving.

Most states don't allow bidders to condition acceptance of proposals upon award of more than one contract, but they will let the contractor call back unopened proposals before a bid opening after having been read low earlier on other projects.

About one-fourth of the states allow a bidder to bid on several projects and limit the overall value of work it will accept at one letting.

• **Subcontracting**—All states allow some form of subcontracting and equipment rental. Some states don't recognize subcontractors as such, but will let prime contractors use them as agents.

Subcontracting and equipment rental firms show up as small business operations. It's estimated that 15% to 25% of total contract work is done by subcontract or by using rented equipment.

Subcontracts sometimes can account for up to 50% of the contract amount, and in addition may include specialized work. Nationwide average for subcontracts is estimated at $50,000.

• **Contract characteristics**—Some contracts of several million dollars each have been let, especially on the interstate system. However, better than 95% of contract awards are under $2 million. Greatest number of awards for primary and interstate projects fall between $100,000 and $1 million. Secondary projects usually fall in the $25,000 to $250,000 group.

Percentage of contracts of $1 million or more awarded for interstate for 1957 is somewhat larger than the national average for other federal aid work.

Federal Water Law Is Supreme

The United States Supreme Court has upheld the 160 acre limitation on land supplied with water from federal reclamation projects. The decision affects 17 western reclamation states.

The court reversed a California Supreme Court ruling that the federal government, in contracts with water distribution agencies, could not enforce a federal law restricting to 160 acres the amount of land a single owner can irrigate with water from a federal reclamation project.

The decision opens the door to resumption of reclamation activity in the state. California projects previously authorized or awaiting authorization have been suspended while the case was decided. The Sacramento Region 11 of the Reclamation Bureau plans to go ahead with court action to get approval of some 40 contracts with various water agencies for reclamation water.

The California court said the acreage limitation could not apply to privately owned land there. It said the limitation violates the state constitution. Furthermore, it said the state, not the federal government, holds title to unappropriated domestic waters; and that everyone has a right to any reasonable amount of water he can show a need for.

The state decision pleased farmers who had large holdings and were getting water from the $800 million federal-state Central Valley project—on which the test case was based. That case arose when some landowners refused to sign federal water contracts limiting them to water for 160 acres.

In the reversal, the high court said: "From the beginnings of the reclamation program in 1902 the national policy has required the benefits from the program to be made available to the largest number of people, consistent to the public good. The limitation insures that the enormous expenditure will not go in disproportionate share to a few individuals with large land holdings. Also, it prevents the use of reclamation service for speculative purposes."

The State Supreme Court is expected to advise superior courts in California of the high tribunal ruling. Papers to validate the federal-state contracts will be filed in superior courts.

The key to the contracts is a provision that those who get reclamation water agree to sell excess land in 10 years. During that period, however, the farmers can get all the water they want for all their land. The water delivery agencies agree not to deliver water in excess of needs of 160 acres if the land disposal agreements are not signed by the farmers.

In California about 2 million acres are served by reclamation projects. In the 17 western states affected about 7.5 million acres are served by federal reclamation works.

Paltry Salaries Stymie Texas' Big Water Plan

Ever since Texas voters authorized a $200 million water resources development program and the legislature provided $1.2 million to prepare a master water plan last November, the state Board of Water Engineers has been trying to recruit qualified water planning engineers.

Last week the board was still trying. Trouble seems to be that the state's big thinking as applied to development did not extend to authorizing salaries to hire the water engineers to plan the program. The legislature in November set up a $10,000-a-year chief planning engineer position and five $9,000-a-year assistants.

It was May 1 of this year when McDonald D. Weinert, a retired Corps of Engineers officer, took the chief planner's post. Only one of the assistant positions had been filled before. Now Mr. Weinert reports he is unable to hire qualified personnel at the salaries he is able to pay.

Still, the Board of Water Engineers is charged with submitting a preliminary state water plan to the legislature next January. To meet the deadline, the board has just consolidated its existing engineering division with the aborted planning division, with Mr. Weinert becoming chief engineer of BWE. Even this position has suffered on appropriations; the chief engineer's post was set up in 1953, but no funds to fill it were ever provided by the legislature.

County Group Approves Outlays of $36 Million

Baltimore County Council has approved the borrowing of $36 million to finance a 1959-60 capital improvements program. Bond proposals will be submitted to voters in the November election.

Plans call for $24 million to be spent for schools, $8.7 million for roads, bridges and viaducts and $1.7 million for public buildings. Remaining funds will go for parks and other recreational sites, plus other potential needs.

Congress Takes a Giant Step

Congress has notched up another gain for federal water projects. Action last week makes it possible to plan future water requirements on a sound engineering basis.

The omnibus rivers and harbors bill, now at the White House, broadens water supply legislation to allow construction of surplus water storage for future needs in Corps of Engineers and Reclamation Bureau reservoir projects.

This move has been urged for the last six years or more by some agency heads, municipal officials and congressmen.

Under the bill, the Army Engineers and Reclamation Bureau can estimate anticipated demand for municipal and industrial water at all stages of planning for storage projects. This study will range from the surveys and investigations that precede Congressional authorization to the final planning stage, when determination of anticipated needs becomes a critical factor in final reservoir design. For guidance in these appraisals, the agencies will call on the Public Health Service and other sources that maintain a continuing inventory of local water supply problems and anticipated needs.

Up to now, the agencies could include water supply storage for community and industrial use in dam plans only if they had a firm contract in hand, binding the users to pay for the cost of the additional storage within a fixed period, usually 50 years, figured as the useful life of the project. Local officials could not commit themselves to such a contract unless the need for the water already was present or definitely predictable for the near future.

• **Costs to be shared**—Congress did not write a blank check in Title III of the omnibus bill, the section cited as the Water Supply Act of 1958. The legislation specifies that before construction or modification begins on any project including water supply storage, state or local interests must agree to pay their equitable share of the cost, determined on the basis of benefits received.

Storage capacity to meet future needs is limited to 30% of the total estimated cost of the project; state or local interests must give assurances that they will contract for use of the storage in time to permit paying their share within the life of the project—but never more than 50 years after storage for water supply begins.

No payment has to be made until the supply is first put to use, and no interest shall be charged until that time. However, interest charges cannot be deferred more than 10 years.

How much will be added to Engineer and Reclamation projects as a result of the provision of storage for anticipated water supply needs is anybody's guess. All that's known now is that the broadened legislation will be important to the entire country, although the possibilities seem of greater critical significance to the West.

Applications from local communities to the Corps and to Congress for modification of authorized, under construction or completed reservoirs indicate the need of providing storage in advance for anticipated water demands.

• **Communities need planning**—Communities and industries are suffering today from the lack of authority and engineering services to anticipate future water supply demands during design of federal dams. Lack of engineering studies, common among smaller municipalities, is one deficiency the new legislation will help correct.

The Corps and the Reclamation Bureau will make intensive studies of anticipated local water supply needs and will be able to advise communities on what agency experts foresee. Then it will be up to local authorities to engage skilled aid to verify or modify the federal estimates. In fact, a local government or water agency would want this well-backed information before it would commit itself under the terms of the new legislation.

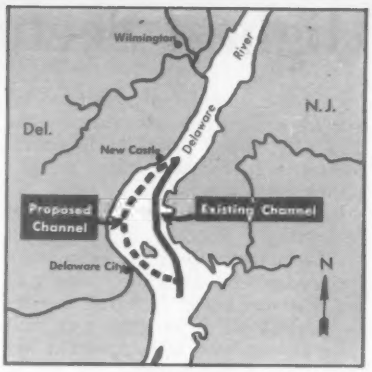
Should Design Esthetics Be Regulated?

Design esthetics will be controlled by municipal regulation if recommendations of a new report are followed. The report on "planning and community appearance" favors municipal regulations governing use of color, building materials, landscaping, location and the grouping of buildings.

The report is the result of four years' study by a committee of 11 architects and planners known as the Joint Committee on Design Control. The committee represents the New York chapters of the American Institute of Architects and the American Institute of Planners.

The report pointed to Scarsdale and Rye, N. Y., and Stratford, Conn., where steps already have been taken toward design control. It said, however, that most ordinances now in effect are "aimed mainly at preventing the worst excess of visual disorder.

The report was published by the Regional Plan Association of New York City.



New "Industrial" Channel Proposed on Delaware

A big chunk of industrial construction is in the offing if current plans to dredge a new shipping channel in the Delaware River materalize.

The channel for deep water vessels would be dug for 10 miles along the west side of the river terminating at New Castle (see map). It would be a strong spur to industrialization along some five miles of the west bank.

Strongly urged by local interests, the dredging plan recently found favor with the Senate Public Works Committee, which directed the Corps of Engineers to prepare a feasibility report.

Negotiated Job

Four contractors named for $137 million bay crossing

Firm proposals on $137 million of work to be let on a negotiated basis have been submitted to the Chesapeake Bay Ferry Commission. Four firms are expected to join to build the 17.5 mile long bridge-tunnel link across the mouth of Chesapeake Bay.

Speed in getting the work under way is given as one reason for negotiation instead of competitive bidding. Further, there are only five U. S. firms handling such large projects and one has dropped out of negotiations, says Lucius J. Kellam, chairman of the commission. And, since the remaining four probably will pool their bids, the job would be negotiated, he adds.

The four firms are Tidewater Construction Corp., Norfolk, Va.; Peter Kiewit Sons' Co., Omaha, Neb.; Raymond International, Inc., N. Y.; and Merritt-Chapman and Scott Corp., N. Y. Sverdrup & Parcel of St. Louis is consultant for the commission.

There is no formal agreement yet. Actual contracts are contingent on financing which is expected to be cleared up early in July. The commission plans to begin selling bonds in September.

Highest Sector-Gate Lock Is Under Way

California's capital city, Sacramento, will become a deep-water port as result of a $40 million Corps of Engineers construction program that is just getting into full swing.

Bids were open last week for a canal connecting a proposed ship canal and the Sacramento River at Sacramento. Included is a bascule bridge crossing of the canal and a large lock that includes the highest lift sector gates ever built (21.1 ft maximum lift). Apparent low bidder was a joint venture of Rothschild, Raffin & Weirick, San Francisco, Yuba Consolidated Industries, Inc., and George Pollock Co., at $6.5 million just off the government estimate of $6.54 million. High of seven bidders was $7.6 million.

Meanwhile, excavation is getting under way as a result of May bids on a $7 million contract for 6.8 miles of the 43 mile canal. Contractor is McCammon-Wunderlich Co. & Wunderlich Contracting Co. of Palo Alto. This contract includes 23 million cu yd of excavation, bid at $0.2725 a cu yd.

The 43 mile canal will be dredged to a 30 ft depth and will have a 200 ft bottom width. It starts at the confluence of the Sacramento and San Joaquin Rivers, where deep water is already available to the Pacific Ocean through San Francisco Bay and the Golden Gate. The first 18 miles of the canal involves dredging and straightening the existing channel of the Sacramento River and Cache slough.

The final 25 miles of channel takes off cross-country to bypass the narrow, meandering route of the Sacramento River. Much of this follows an existing levee of the Yolo Bypass—a flood channel—and uses the levee as one bank of the canal.

The harbor will be formed around Washington Lake, which lies directly west of Sacramento.

The lock involves sector gates with maximum lift of 21.1 ft—by far the highest lift ever used for sector gates. Each set of these sector gates is simply a pair or radial gates with vertical axes. Filling and emptying action results from water passing through and around the gates as they are slowly opened.

One reason for employing sector gates for the Sacramento Lock is the possibility of reversal of head. Most of the time, the Sacramento River will be at a higher elevation than the ship canal with lift averaging 12 ft. But occasionally during low river flow, a high flood tide will pass up the ship canal faster than the river, resulting in a maximum 3.6 ft reverse head.

The four sector gates (two pair) are each 45½ ft high. Radius is 43½ ft with the sector angle just under 75 deg.

NEW SHIP CANAL will reach 43 miles to San Francisco Bay tributary.

The lock will have a 86 ft width and clear length of 640 ft. Of this, 600 ft will be usable, with 40 ft held clear for turbulence due to filling and emptying.

The bascule bridge is a single leaf combined highway and railway bridge designed for the Corps of Engineers by Sverdrup & Parcel, St. Louis. The leaf span is 134 ft 9 in. long. Width of the bridge is 48 ft between trusses.

• **Stopped by Korea**—Work was first started on the project in 1949 when more than $2 million was spent.

The ship canal became active again in 1956 with award of a $2 million dredging contract. Target date for completion of the federal work is 1962.

The work is a project of the Sacramento District, Corps of Engineers. Col. A. E. McCollum is District Engineer.

Bridge Burns When Oil Tanker Sinks

Damage was not restricted to the ships when a 300,000 bbl oil tanker barge, the Empress Bay, collided with a freighter in New York City's East River and sank just south of Manhattan Bridge. In the explosion and fire that followed, 100 ft high flames set fire to the roadway of the bridge, burned through high tension cables and blistered paint on the steelwork.

New York City to Spend $1 Billion for Schools

New York City's Board of Education plans to start a 10 year, $1 billion school construction program in 1960.

Charles J. Bensley, chairman of the board's committee on building and sites, says the long-term program would provide $400 million for new construction to meet population growth and mobility and $600 million for replacement of 268 schools more than 50 years old.

One phase calls for 75 new elementary schools, 12 senior high schools and 17 junior high schools. Also, 30 existing elementary plants would be modernized by the addition of auditoriums, gymnasiums and lunchrooms.

The pile that's better because it's hollow . . .

USS National Seamless Steel Pipe Piles

The circular, hollow form of USS NATIONAL Seamless Steel Pipe Piles makes them the logical choice for heavy-duty foundations. Here's why:

More strength with less weight is provided by the circular cross section, which is structurally superior to any other shape for compression loading.

You get greater loading capacity because NATIONAL Seamless Pipe Piles possess high compressive yield strength without loss of weldability. And they can be filled with concrete for even *greater* loading capacity.

Costs are reduced because the piles can be driven faster through tough formations. NATIONAL Seamless Pipe Piles provide positive penetration under rugged driving conditions, and won't broom under the pounding of large hammers.

You can check alignment and pile condition simply by lowering an electric light into the driven pipe pile. In open-end piles, you can check the bearing area to assure an even bearing.

For greater strength with less weight, plus higher loading capacity at less cost, consult our engineers about NATIONAL Seamless Pipe Piles. No matter what your foundation problems are, there's a good possibility these piles can help you save time and money.

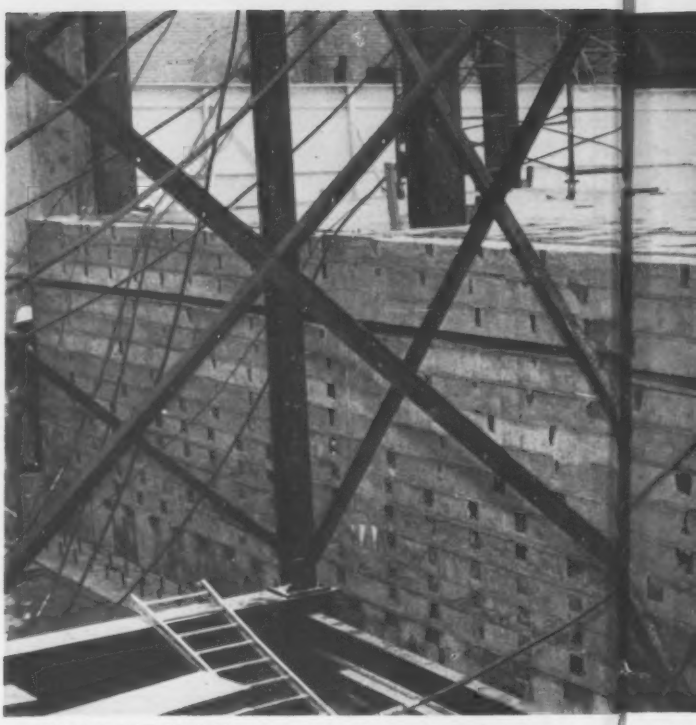
USS and National are registered trademarks

"The world's largest and most experienced manufacturer of tubular products — NATIONAL TUBE"

USS National Tube Division of United States Steel

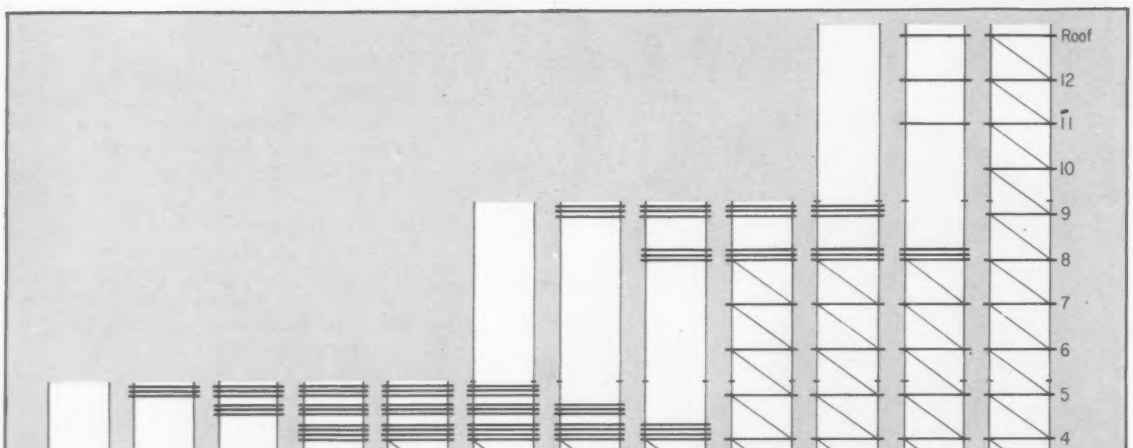
Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors · United States Steel Export Company, New York

MOST DECKS ever raised in a building comprise the roof and 12 floors of a garage in Columbus, Ohio.



NEWLY CAST SLABS, 8 in. thick, make a stack nearly 9 ft high on the basement floor. Top three had started up when photo was snapped.

Height Record Goes Up Again



LIFTING AND ERECTING SEQUENCE for slabs, bracing and columns proceeded as shown in the step-by-step diagrams above.

Lifting speeds ranged up to 12 ft per hour.

UPPER SLABS were parked at the top of the columns pending the lifting, fastening and bracing of slabs below, and erection of the next tier of columns.

for Lift-Slabs in the U. S.

Paul J. Ford
Structural Engineer
Tibbals-Crumley-Musson, Architects
Columbus, Ohio

Erection of the Tower Parking Garage in Columbus, Ohio, has jacked up the U. S. height record for lift-slabs another notch. The structure rises 88 ft above street level. That's 11 ft more than the Citizens Security Corp.'s two-year-old parking garage in Cincinnati, which formerly ranked as the country's tallest lift-slab building (ENR May 6, 1956, p. 25).

Counting the basement and roof, the new garage has 14 parking levels. All but the basement were raised as lift-slabs from a stacked position on the basement floor, where they were cast. This is the greatest number of decks lifted up to now in any building anywhere.

However, an 11 story Mexico City apartment house erected last year with a dozen lifted slabs is still the world's tallest lift-slab building at 101 ft, by virtue of its greater story heights (ENR Nov. 7, 1957, p. 67). And an apartment house planned for construction in Hallandale, Fla., will be tops in both number of decks lifted (15) and height (160 ft) (ENR Dec. 26, 1957, p. 24).

• **Height makes it pay**—The Columbus garage had to be built tall to make it a paying investment. Its plot is only 65 x 110 ft and, counting the cost of two horizontal-vertical parking conveyors, the project cost about $500,000. However, it can store 200 cars, and requires only three employees per shift—a cashier and two elevator operators.

The elevators operate in a central corridor that extends the full length and height of the garage, dividing the structure into what is essentially two buildings (see sketch). Two separate lift slabs comprise each level and are tied together at each end of the garage with horizontal steel struts.

Slabs are 21 x 56½ ft in plan by 8 in. thick, and are designed as flat plates. They are supported by six steel columns in each half of the garage. The columns are set back 2½ ft from three sides of the slabs and 8 ft 2 in. from the fourth side. Columns are 12 in. WF shapes converted to box sections by plates welded between the toes of the flanges.

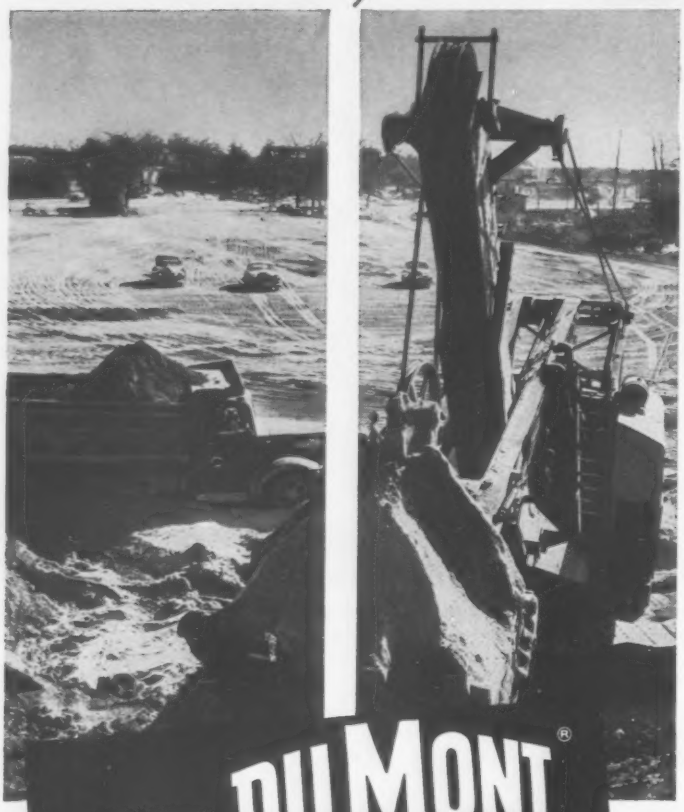
The structure is braced against lateral loads by a reinforced concrete shear wall five stories high at one end of the building and by diagonal bracing on all four sides. Diagonals run between columns at the ends of the slabs.

• **Tower aided erection**—Erection of the structural steel columns was facilitated by a temporary bracing tower 8 stories high in the elevator corridor. Columns in the first tier, extending above the fourth floor, were braced at the top by horizontal members connected to the tower.

After all the slabs were cast, the temporary bracing was removed. The slabs were raised on the free-standing columns. Nine slabs were parked just above the fourth floor (see lifting-sequence diagram). Then the first four slabs were placed in permanent position and braced. This included attachment of the ground-floor slabs to the basement walls and connection of the second, third and fourth-floor slabs to the shear wall.

The second tier of columns, rising just above the eighth floor, was next erected, plumbed and temporarily con-

TIGHTEN IT UP!



WITH DU MONT® 2-WAY RADIO

the tighter you close it up—
THE MORE MONEY YOU'LL MAKE!

Whether you're digging, pouring, or erecting — the tighter you coordinate your equipment, the faster and more economically you'll clean up the job.

Du Mont 2-Way Radio provides the dependable, high-performance communications you need between vehicles, between base stations, or between base and vehicles. Du Mont equipment is built to take the rough and tumble service of construction service.

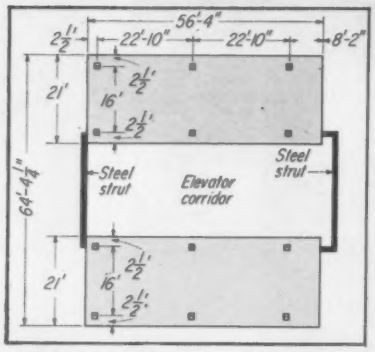
Compare Du Mont 2-Way Radio with any other make and you too will see why it is the fastest-growing line of 2-Way Radios in the world...

Write for Details...

Mobile Communications Division,
ALLEN B. DU MONT LABORATORIES, INC.,
Clifton, New Jersey

"DEPENDABLE DU MONT"

. . . Bracing Essential



TYPICAL FLOOR. Lower floors are connected to shear wall (not shown) at end.

nected to the bracing tower. This time the bracing was left in place during the lifting operations because the lighter column sections needed it. Five slabs were raised to the top of the columns, and the fifth through the eighth floors were brought to final position.

After this group of slabs was braced, the last tier of columns was erected and guyed. Next the top slab was raised one story, which permitted removal of the guys. Then the remaining slabs were positioned.

Lifting speeds ranged up to 12 ft per hour in contrast to the usual rate of 6 to 8 ft per hour. The lifting operations took 5½ weeks.

• **Final connections welded**—All slabs were connected to the columns by load wedges placed between the bottom of cast steel lifting collars embedded in the slabs, and shear plates shop welded to the columns. After positioning the slabs, the wedges were welded to both the collar and the column. Additional collar-to-column welds on the underside of the slab were made on the unwedged faces of the columns. On the top side of the slab, collars and columns were welded together all around.

Columns at the top of the building, though still in the 12 in. wide-flange group, are smaller than those at the bottom. The resulting wider gaps between columns and collars were closed with ¾ in. round rods, welded to both column and collar.

Architects for the project are Tibbals-Crumley-Musson, of Columbus. The author designed the structure and supervised construction. General Maintenance & Engineering Co., of Columbus, held the general contract. Skyhook Lift Slab Co., of Kansas City, Mo., was the lifting contractor. George P. Dysart Co., of Columbus, erected the steel. The Pigeon Hole Parking, Inc., of Seattle, designed and installed the conveyor-elevators. F. W. LeVeque, of Columbus, owns the garage.

NOW... STRAN-STEEL BUILDINGS IN FACTORY-APPLIED COLOR!

There's a new, *new* luxury-look to steel buildings! Stran-Steel buildings with factory-applied Stran-Satin Color come direct from the plant in six gleaming colors—blue, green, bronze, rose, gray and white—to give a new dimension to steel building design. Mix colors for unusual two-tone effects. Or combine them with collateral materials—brick, wood, stone, or glass.

Added Protection . . . with Remarkable Economy

Stran-Satin Color is a double layer of baked-on vinyl aluminum. This new exclusive coating provides an attractive, durable color-fast finish which will protect your buildings many, many years longer than paint. Stran-Steel buildings in color mean maintenance savings, too, for Stran-Satin Color will not blister, peel or sun fade.

For only a few dollars more per building, you can build with gleaming colors. Now your Stran-Steel building has the safety of steel, the economy of mass-production *plus* the distinctiveness of Stran-Satin Color—the look of luxury.

Tomorrow's Buildings Today!

Stran-Steel Rigid Frame buildings give you built-in quality for years of service. Their clear-span interiors provide 100% usable space. They are flexible to suit any design. All-steel construction makes them fire-safe, durable and easy to insulate. Available in widths from 32 to 80 feet and any length, as a single building or in multiples. Ideal for retail operations, manufacturing and wholesale.

Stran-Steel Purchase Plan requires only 25% initial investment with up to five years to pay the balance. Your Stran-Steel dealer can give you complete details. Look for him in the Yellow Pages under *Steel Buildings* or *Buildings—Steel.*

NEW STRAN-MASTER IN STRAN-SATIN COLOR COSTS 30 TO 50% LESS

New Stran-Master, lowest priced steel building, is also available in Stran-Satin Color. For less than rental costs, you can have an attractive, quality, all-steel, all-purpose Stran-Master —economy model of the Stran-Steel line.

Dept. 27-60

STRAN-STEEL CORPORATION

Detroit 29, Michigan • Division of

NATIONAL STEEL CORPORATION

Stran-Steel Corporation, Dept. 27-60
Detroit 29, Michigan

☐ Please send me more information on Stran-Satin Color.

☐ Please send me information on the new Stran-Master commercial buildings.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE___ STATE____

McConnaughay WEATHER-PROOF EMULSIFIED ASPHALTS

Plant Mixes

Application Types

Special Uses

Road Mixes

Maintenance and Patching

BITUMINOUS PAVING CONTRACTORS...

Our plans for expansion now warrant the licensing of qualified contractors in the Pacific, Rocky Mountain, and Southwestern States. Investigate the advantages of being a McConnaughay Licensee.

Write or call...

McCONNAUGHAY LICENSEES Operating K. E. McConnaughay Emulsified Asphalt Plants

FLORIDA
E. A. Mariani—Emulsified Asphalt
Hooker's Point, Tampa

ILLINOIS
Emulsions, Inc.—*Lawrenceville*

INDIANA
Bituminous Materials Co.
P. O. Box 1140, *Terre Haute*

Wabash Valley Asphalt Co.
Terre Haute

Walsh & Kelly
R. R. No. 2, *Gary*

Brookman Construction Co.
17th & Gharkey Sts., *Muncie*

Fauber Construction Co.
Lafayette

Asphalt Materials & Construction, Inc.
960 East 22nd, *Indianapolis 2*

IOWA
Bituminous Materials & Supply Co.
409 Fifth Street, *West Des Moines*
Plants: *Spirit Lake, LeMars, Carroll, Algona, Lehigh, Davenport*

KENTUCKY
Emulsified Asphalt Co.—*Kuttawa*

LOUISIANA
Bituminous Materials Co.—*Metairie*
Serving Alabama, Mississippi, and Louisiana

MAINE
Doherty and Swearingen Co.
53 Main St., *Yarmouth*

MASSACHUSETTS
James Huggins & Sons, Inc.
Medford & Commercial, *Malden 48*

MICHIGAN
Bituminous Materials Co.
318 Atlantic St., *Bay City*

Bituminous Materials Co.- *Escanaba*

Bituminous Materials Co.
416 S. Water St., *Jackson*

NEW YORK
Knight Paving Products, Inc.
1655 Union Rd., *Gardenville*

Knight Paving Products, Inc.
Vine Street, *Ithaca*

Knight Paving Products, Inc.
1980 East Avenue, *Rochester 10*

Knight-Bitumen Corp.—*Watertown*

Albany Asphalt & Aggregates
75 State St., *Albany*

Bimasco, Inc. *(2 plants)*
312 Brook Street
Bayshore, L. I., N. Y.

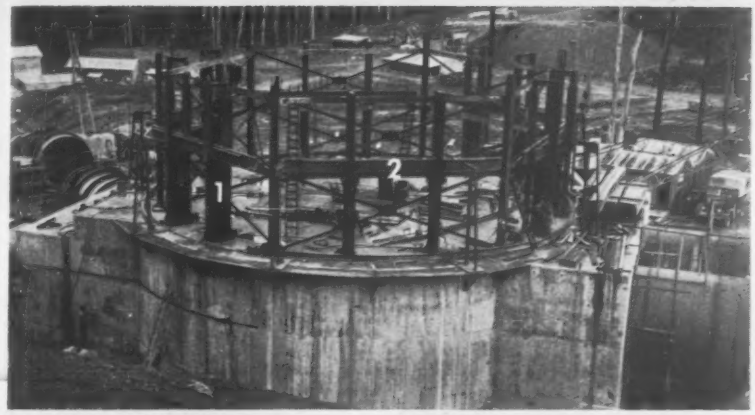
SOUTH CAROLINA
Seaco, Incorporated
2700 Industrial Drive, *Columbia*

TENNESSEE
Asphalt Products Co., Inc.
Powell Ave., *Nashville 4*

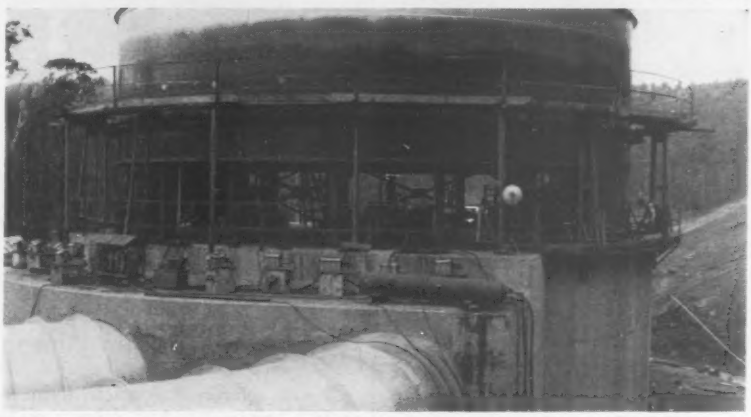
CANADA
T. J. Pounder & Co., Ltd.
1474 Wall St., *Winnipeg, Man.*

Eastern Representative:
John A. Dow
157 Church St., *New Haven 10, Conn.*

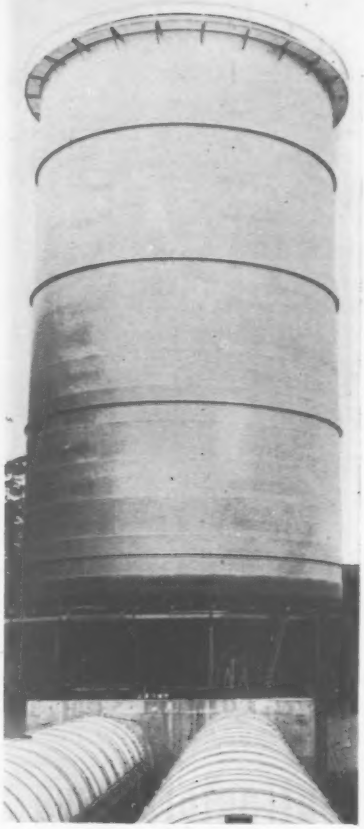
K. E. McCONNAUGHAY LAFAYETTE INDIANA
EMULSIFIED ASPHALT *PLANTS AND PROCESSES*



SUPPORTING FRAME sits on tower base. Jacks (1) raise beams (2) whose ends engage . . .



STEEL RINGS, which are welded up at base. Jacks then raise rings 7 ft so next lower ring can be fabricated. Then assembly is lowered to base and lifting beams repositioned.



COMPLETED SURGE TOWER stands 132 ft high and 55 ft in diameter.

Jacks Erect Steel Surge Tower

An unusual method of erecting cylindrical steel towers using unskilled labor and uncomplicated equipment at low cost has been used successfully on several large jobs by Humes Ltd of Melbourne, Australia. Typical of the jobs was erection of a surge tower 132 ft high and 55 ft in diameter on the Wayatinah "B" water power project of the Hydro-Electric Commission of Tasmania, Australia (see pictures).

In the Humes method, the top ring, or strake, is fabricated on a completed base and jacked up so the next lower strake can be fabricated to it. The completed rings then are lowered onto the tower base, the jacks are retracted and re-positioned so the entire assembly can be raised to permit the next ring to be fabricated at the tower base level.

• **Lifting system**—On the Wayatinah surge tank, hydraulic jacks were mounted on a hexagonal supporting frame that stood inside the rings. Twelve jacks, in pairs, raised six lifting beams—the end of which were connected to the inside of the tower ring assembly. A dual rack and pawl on each jack guarded against sudden failure of the system. Sudden movements were limited in this manner to 1 in.

The 12 jacks were connected in three banks of four and operated by a pressure pump supplying water and soluble oil. Pressure gages were installed at each jack and at the control panel of the system, which was tested to 600 psi. The lifting process was controlled by three main valves. Each ram was supplied with a stop valve and a bypass valve. Each lift of jacks was 7 ft.

Three calibrated scales inside the tank helped keep the structure level within 1 in. during the lift. A tolerance of $\frac{1}{4}$ in. was required when the tank was in final elevation.

• **Supporting frame**—Since the supporting frame lay wholly within the tower, no guys could be used and the frame had to resist all lateral wind forces during erection. The two-story hexagonal frame was braced in the plane of each face, leaving the entire central space clear for working. The lifting beams, each supported by two jacks, were outside this framework. A circular monorail outside the tank was supported on tubular pipe that also carries painters' walkways. The monorail handled individual steel plates for each ring.

Plate thickness varied from $\frac{3}{8}$ in. at top to $1\frac{1}{8}$ in. at the bottom of the tower. Edges were machined for butt welding, and sand blasted and coated with plastic paint before welding was done.

• **Advantages**—Humes, officials say the main advantage of the jacking method is that all work is done near ground level, providing better quality welding by less expert craftsman. Added safety in working closer to the ground also is an important factor.

another new Schramm product...

WITH SCHRAMM'S NEW DIESEL PNEUMATRACTOR . . .

Contractors save time and fuel costs

The convenience of a self-propelled tractor-compressor! The economy and efficiency of diesel power! Contractors find these features are combined in the new Schramm Diesel PNEUMATRACTOR. They get all the mobility and versatility for which PNEUMATRACTOR is famous . . . lighter weight, easier handling, lower operating costs. Yet first cost is no higher than that of many gasoline-driven air compressors, which depend on other power to move them.

Diesel Power at the price of gas-powered units.

More compact—lower, shorter, lighter than competitive gasoline or diesel units.

Fuel economy—uses same fuel as contractor's other equipment. Delivers more air per pound of fuel.

One responsibility—engine-compressor unit designed and built by Schramm—sales, service and all parts from your Schramm Dealer.

Plus features—12 volt starting, one fuel filling per day, all PNEUMADIESEL advantages with customary Schramm features.

GET FREE INFORMATION. Now is the time to cut contracting cost with PNEUMADIESEL's extra power and efficiency. See PNEUMADIESEL at your nearest Schramm Dealer—or write us for full details.

See the Yellow Pages for local Sales, Service and Rental of Schramm Air Compressors.

Enbloc power unit with heavy duty air cleaners on engine and compressor. Proven piston design outlasts any other method of producing power or compressing air.

PNEUMADIESEL provides 90% interchangeability of parts between engine and compressor. Average mechanic can service without special training.

Schramm, Inc.

MANUFACTURERS OF AIR COMPRESSORS

620 North Garfield Ave. • West Chester, Pa.

Tetrapod Challenged . . .

. . . By New "Tribar" Shape

A new reinforced concrete form to protect breakwaters and other seaside installations against wave action will get a test in Hawaii soon. The new form is called "tribar." Its function is the same as the tetrapod.

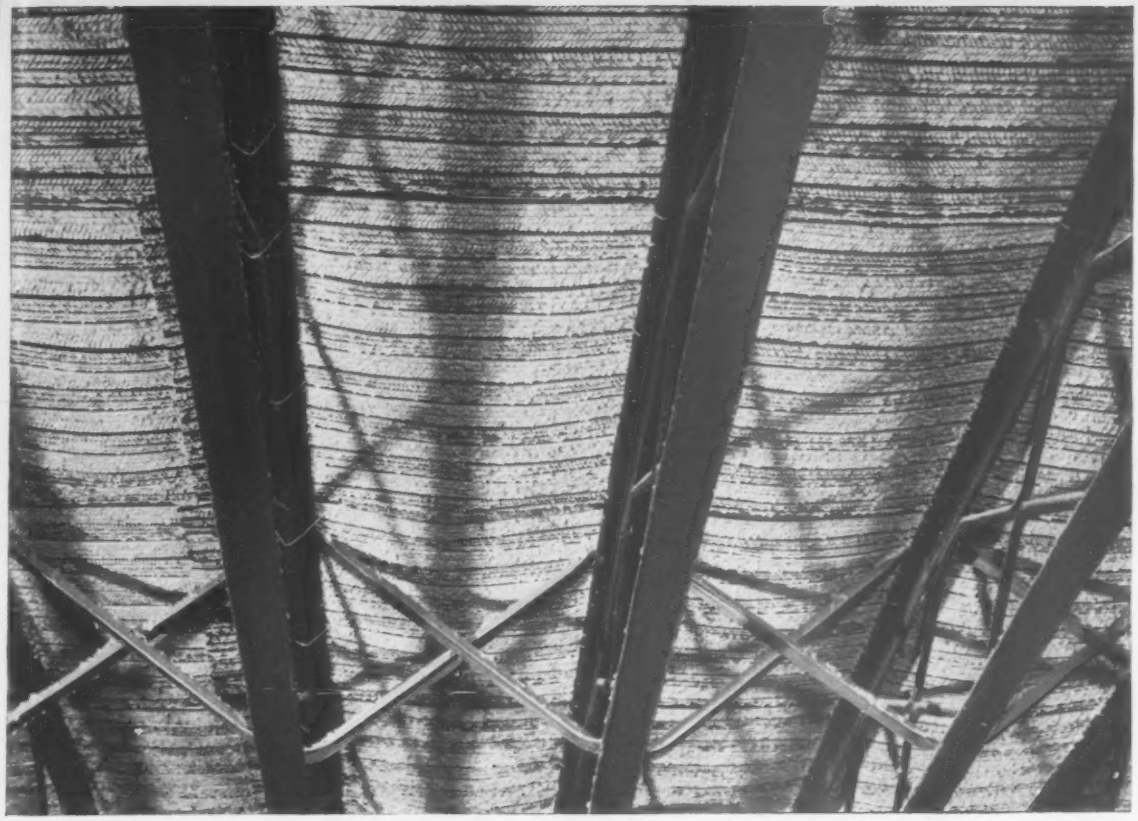
The tribars weigh 17.8 tons—2.2 tons less than tetrapods. The drums, or vertical sections, of the tribars are 6½ ft high and 3¼ ft in dia.

Tests at the Vicksburg, Miss., Waterways Experiment Station showed tribars are 2½ times more stable than tetrapods when placed in a single layer and 50% greater in random placing.

The Corps of Engineers recently awarded an $889,000 contract to Hawaiian Dredging and Construction Co. for installation of tribars to protect the breakwater at Nawiliwili harbor in Hawaii.

Three alternatives were offered bidders; all rock construction, tribars or tetrapods. The tribars were low because fewer of them were needed—590 tribars versus 810 tetrapods. The tribars shape and stability allows single layer placement above water level. The tribar bid was $196,000 lower than the low on tetrapods.

The tribars were developed by Robert Q. Palmer of the Hawaii District of the Corps. A patent license is pending in his name with the U.S. government licensed for free use.



This floor slab was formed and reinforced in ONE operation!

Left: Workman simply lays Gold Bond ⅜″ Rib Lath across joists and...

Right: ...quickly wire-ties it in place. Pour follows immediately.

Gold Bond ⅜″ Rib Lath Centering provides *both* pouring form *and* rigid reinforcement for poured concrete roof and floor slabs —so it saves *both* time *and* money on the buildings you plan.

You specify *one* product...workmen perform *one* laying-and-tying operation. Costly temporary bracing is unnecessary.

A firm pouring base, Gold Bond® ⅜″ Rib Lath becomes mechanically bonded to the very bottom of the slab—the place where tension stresses are greatest. For technical data, write Dept. EN-78, National Gypsum Company, Buffalo 2, New York.

Gold Bond
BUILDING PRODUCTS

NATIONAL GYPSUM COMPANY

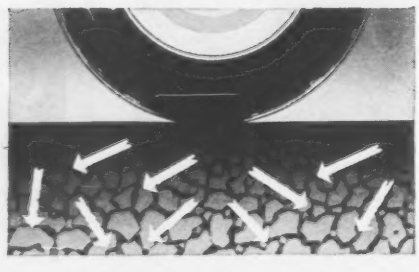
FOR HIGHWAYS WITH A SOLID FUTURE

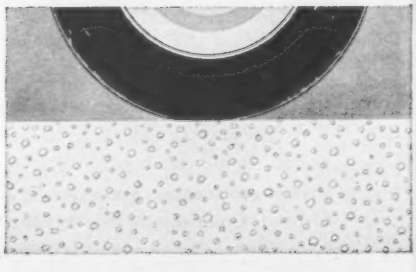
Concrete

On the Ohio Turnpike, every mile is —the paving material with no m

Left: Diagram shows how flexible pavement parts must move. This grinds off corners of aggregate, destroys interlock, causes deep wear. Result: low spots, subgrade overloading, failure.

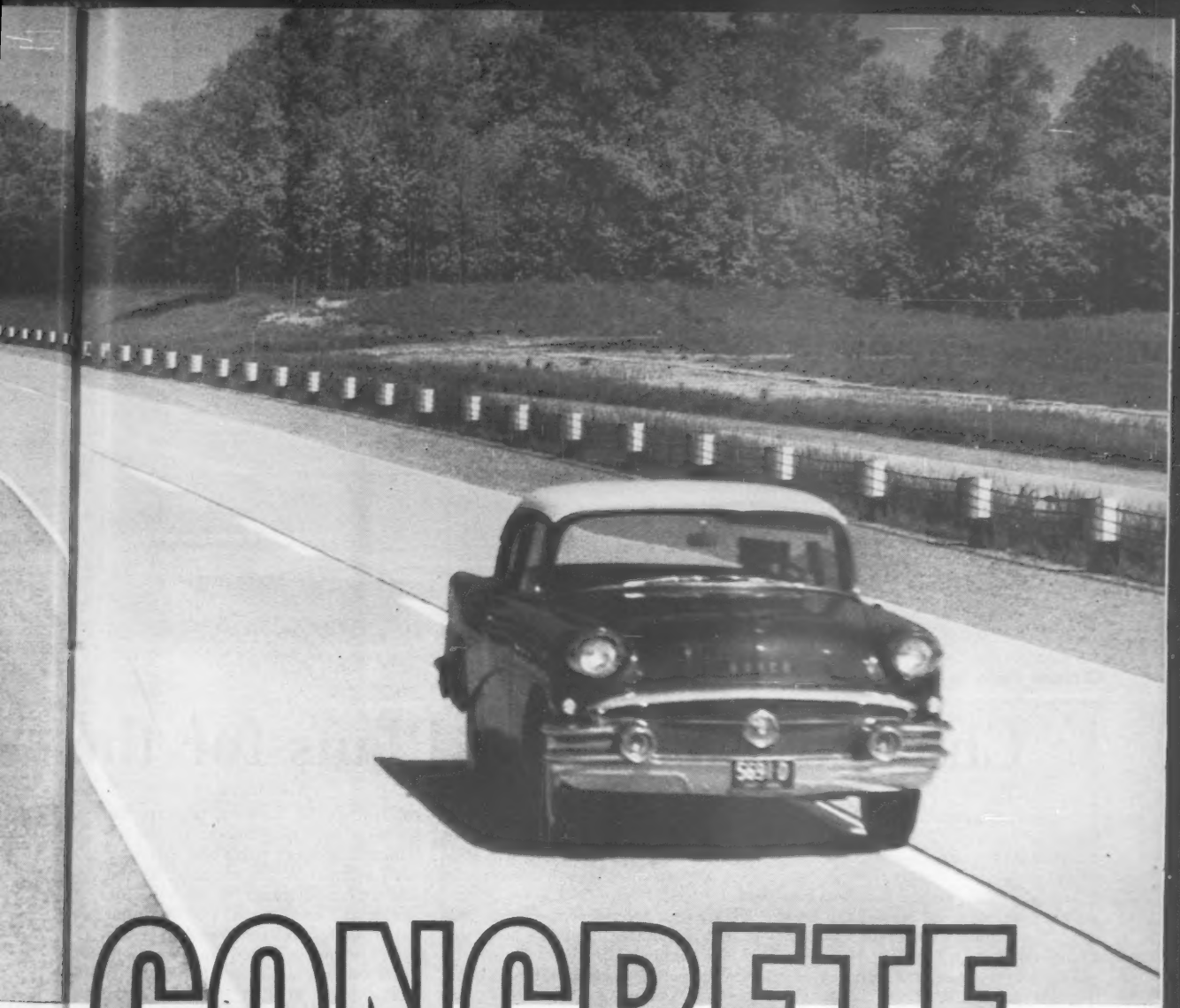
Right: Diagram indicates stability of rigid concrete. There's no internal movement of aggregate and bond. One reason only concrete's load-bearing strength can be computed *mathematically*.





7,181
by ch
unnin
that c
Last y
11¼ m
to 90,0
The

PORT



is CONCRETE

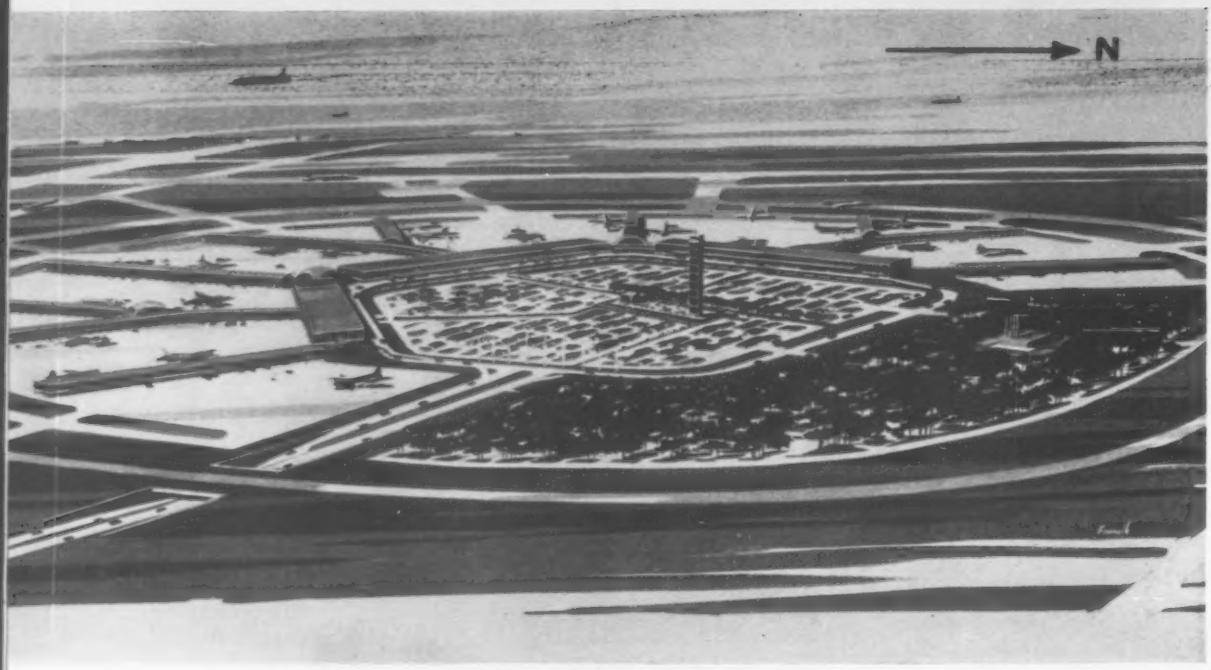
no moving parts" to cause hidden wear!

$7,181,898, based on first-cost estimates, was saved by choosing concrete. Now maintenance costs are running about half the original estimates! More proof that concrete does the job—and does it for less money. Last year, Ohio's concrete Turnpike handled some 11¼ million vehicles—thousands with loads of 70,000 to 90,000 lbs.—saved money doing it.

There's a reason. Concrete is built to *bear* like a beam, not to *flex*. For flexibility means movement . . . movement creates friction . . . friction brings wear that causes a pavement to wear out *inside* as well as on the surface. That can't happen with concrete.

Stability helps give today's concrete its 50-year-plus life expectancy—and its lasting, flat smoothness. On new Interstate Highways, on all heavy-duty roads, concrete means true economy both now and in the future.

PORTLAND CEMENT ASSOCIATION *A national organization to improve and extend the uses of concrete*



O'Hare Field will get $120 million in improvements as . . .

Chicago Makes Big Plans for the Jet

Chicago's O'Hare Field has been getting a critical look for some time from city and airline officials and consulting engineers.

The objective: To see how the big, 10-sq-mi International Airport can best meet the challenge of jet-driven commercial and cargo planes.

The result: Agreement between airline and city officials on a $120 million modification of an original $147 million tangenital plan of runway arrangements and the development of a plan that will provide a system of open parallel runways.

Mayor Richard J. Daley says that the proposed modern terminal layout will provide all facilities needed to meet the demands of the jet age. Moreover, it will utilize the majority of the elements of the existing construction at O'Hare Field.

The improvement plan calls for two stages of construction. The $120 million is for the first stage. Nucleus of the new plan will be three two-story terminal buildings, 900x130 ft. Two of them will be built during the first stage of construction and the other one later. They will form a wide open U, with three U-shaped and four straight-fingered passenger loading docks along the outside and a huge parking area inside.

• **Ultimate development**—The over-all plan calls for 94 gate positions—three times the number at busy 640 acre Midway Airport on Chicago's southwest side.

Ultimate development under this plan will provide parking space for 12,000 automobiles. There also will be ample space for ticket counters, waiting facilities, restaurants and other concessions and operational activities of the airlines.

Incoming and outgoing traffic will be separated in order to expedite the free movement of people and vehicles. There will be roadways on two levels adjacent to the terminal buildings. The upper level will be used by vehicles discharging passengers; the lower level for those boarding vehicles.

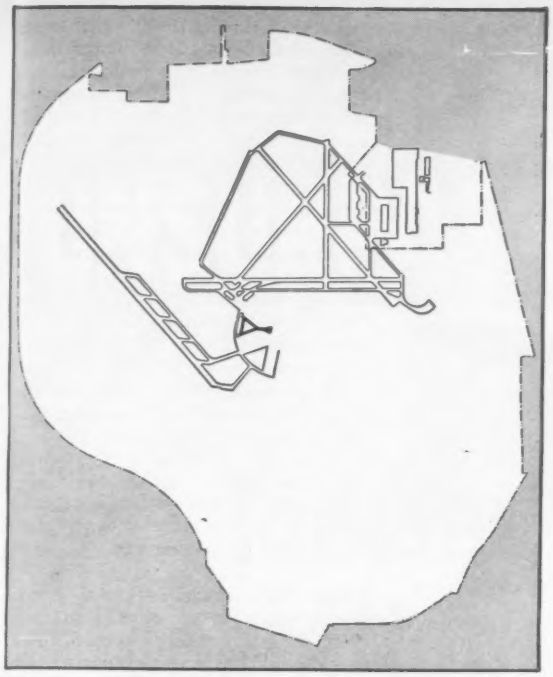
• **Estimated costs**—The first phase of the program may cost in the neighborhood of $120 million. This is exclusive of construction expenditures to date and does not consider the acquisition cost of the 6,500 acre area. About $35 million will be spent for hangars and $60 million for other structures and improvements. The remaining $25 million will go for financing costs, interest on bonds during construction, architects fees and contingencies.

Preliminary estimates indicate that construction of runways, taxiways and warm-up pads may cost about $9 million. Other major items and estimated costs include: Water, sewerage, heating and air-conditioning, $8 million; fuel storage and handling, $5 million; terminal buildings and concourses, $21 million; paving, elevated roadways and other construction in the terminal area, $12 million; work in the hangar and cargo areas, $5 million; and $35 million worth of hangars.

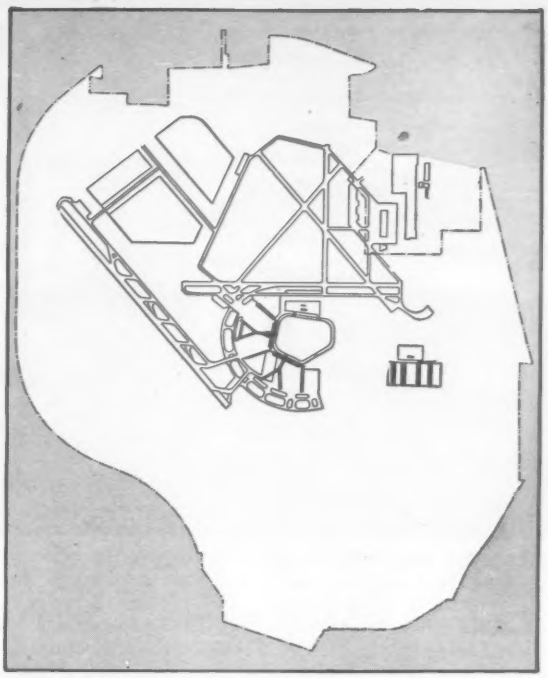
First-stage construction should be ready to take jet-powered craft in late 1960 or early 1961. All costs will be financed by $120 million worth of revenue bonds—except for the land, which is being granted by Chicago. The bonds will be retired by landing fees and proceeds from terminal concessions.

A number of factors were considered in the final decision to modify the original plan in favor of the new one. In designing for jet operations longer runways are needed; more space is required between gate positions; taxiway shoulders need stabilization to protect jet engines from ingestion; additional ramp services are needed. An extensive fuel handling system capable of moving large quantities of fuel into the aircraft in a short time. Fuel storage capacity will have to be enlarged.

Air conditioned concourses and en-



NOW the field is adequate for conventional planes, not for jets.



FIRST STAGE work will improve terminal facilities and runways.

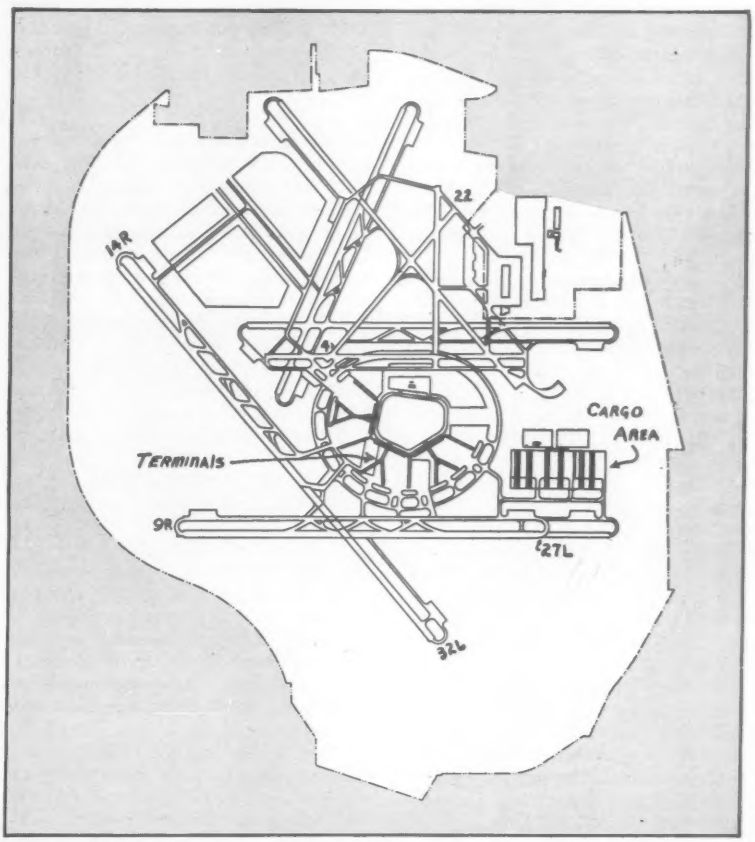
he Jet Age

closed ramps will be provided to protect passengers from noise, heat and fumes. Structures next to jet areas will be insulated and probably have windows with a double thickness of insulating glass. Blast fences will be installed to protect the passengers.

• **More auto traffic**—Another important factor in the present design is that provisions must be made for handling and parking greater volumes of automobiles than originally estimated. Since considerable revenue for repayment of bonds is anticipated from the concessions, special attention must be given to them to stimulate their greatest use by the traveling public.

The problem of air traffic and air control also caused a change in over-all planning for the O'Hare development. Midway Airport is located about 15 air miles southeast of O'Hare, while the U. S. Naval Air Station at Glenview is only about 8 miles to the northeast. This does not permit completely independent air operations.

• **Original plan**—The original master plan was prepared by the late Ralph H. Burke, for several years Chicago's airport consultant. It called for a system of six tangential runways, 8,000 ft long. They were completely independent of



FINAL STAGE construction will set up a complex of runways, taxiways and terminal facilities regarded as adequate for the largest jets.

TELESCOPIC ENCLOSED RAMP, a luxury item for passengers on conventional airplanes, will be a necessity when jet blasts and noise become common.

each other and radiated from a central terminal building. The terminal building itself was proposed as a single concentrated unit wrapped around a multilevel parking garage, which was to accommodate about 3,500 vehicles.

According to this plan, concourses would radiate outward like the spokes of a wheel to serve parked aircraft. These concourses were to be Y-shaped, to provide a maximum number of gate positions in a minimum area.

One reason for modifying the original tangential plan was the need for longer runways to handle jet transports. The runways could not very well be lengthened at their inner or converging ends since they would be intersecting each other and lose their independent operation. Moreover, the cost of buying enough land to permit lengthening them at their outer ends appeared prohibitive.

• **Final plan**—The final plan is one of several studied by the consulting firm in charge of design, Naess & Murphy, architect-engineers of Chicago. During these studies the consultants worked closely with both the Bureau of Aviation and the Department of Public Works of Chicago, the Civil Aeronautics Administration, two other consulting firms as well as with the airlines themselves.

Existing facilities are to be incorporated in the new plan wherever possible. Direction and general location of the runways will not be changed greatly, except as necessary to provide for a large cargo area near the terminal complex. All major runways will have high-speed turn-offs, while the principal instrument runway (9R-27L) probably will have "all-weather" type narrow gage flush lighting and electronic flash approach lighting. Construction of this 10,180 ft long, 150 ft wide runway also will include parallel and connecting taxiways, warm-up pads and high-speed turn-offs. (This has been cut out of the first stage of the construction program.) There also will be blast pavement, 25 ft runway and taxiway shoulder stabilization and drainage.

• **New taxiways**—About $5.8 million probably will be spent for new taxiways and improving existing runways and taxiways during stage one. Major items include a proposed outer circular and connecting taxiways around the terminal complex and a single-way taxiway to the hangar area—plus shoulder stabilization, drainage and lighting.

Present pavements of the 5,760 ft by 150 ft runway 4-22 and the north-south taxiway will be strengthened by adding overlays. And 25 ft bituminous shoulder stabilization will be installed on both sides of existing taxiways that are not over 75 ft wide. Additional lighting probably will be included as it becomes necessary.

• **Utilities**—About $3.5 million will be spent for water and sewage facilities, in stage one. This would include a 30 in. water line to the terminal area, and a water line from the terminal area to the hangar area. There also may be an additional reservoir and water line loop in the terminal area.

New sewage facilities will include a sanitary sewer between the terminal and hangar areas, and extensive storm water improvements for the airport.

It probably will be necessary to make certain alterations to the existing terminal and concourses to meet passenger requirements through 1960, when some of the new facilities will be in operation. Additional interim gate positions may be needed during this period to supplement those now provided by a Y-shaped loading dock of the present terminal building.

Several million dollars worth of apron paving probably will be constructed in the terminal area, and up to $3 million for alterations and additions to the existing parking lot. Studies indicate that provisions should be made for 10,000 to 12,000 automobiles by 1975, instead of the 4,000 to 5,000 envisioned in the original master plan.

The proposed elevated auto roadway serving the terminal area and the grade-level entrance road will be extended to meet Chicago's Northwest Highway at Mannheim Road. Completion of the Northwest Highway, now under construction, will provide a high-speed route to the city's Loop area.

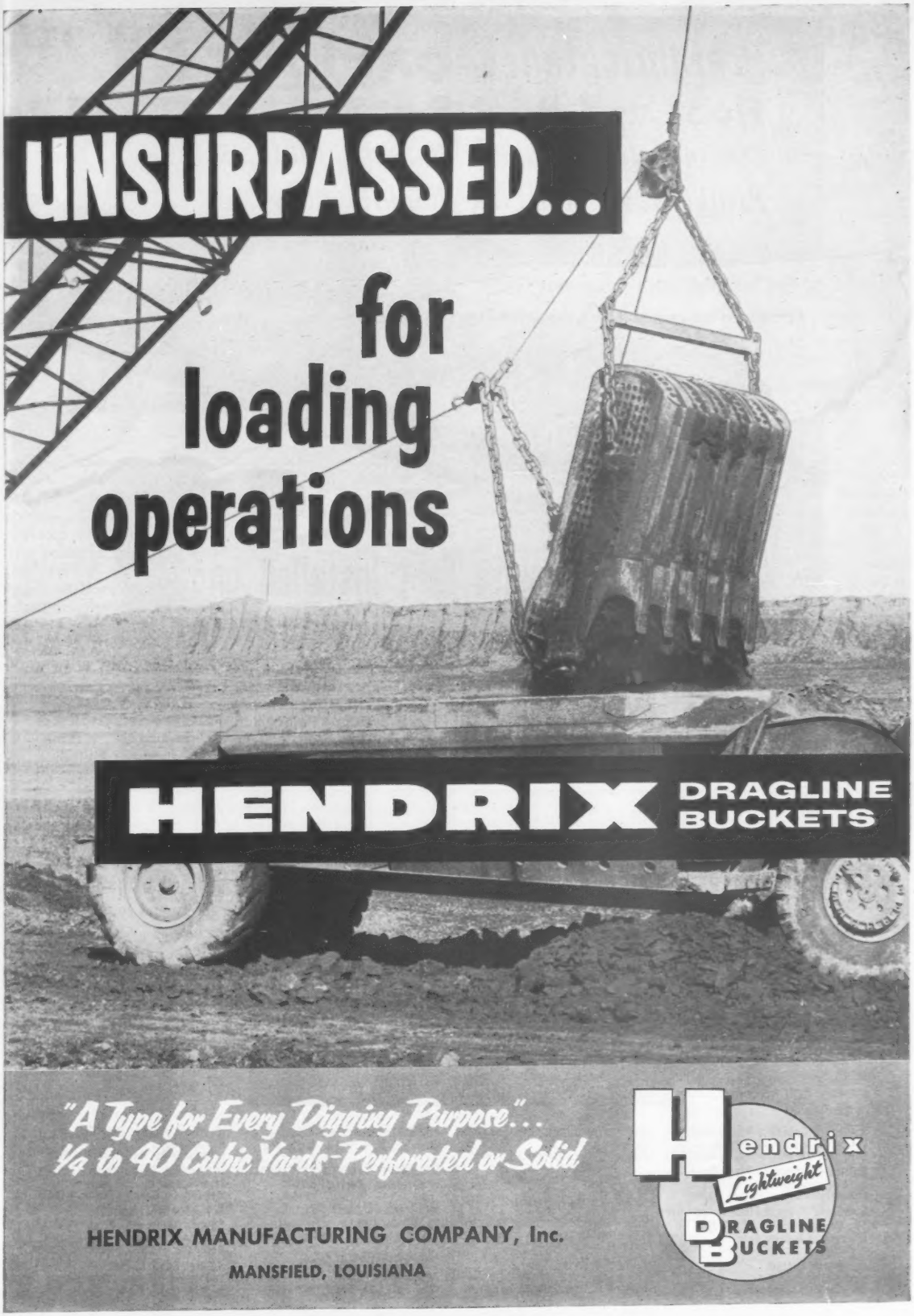
• **This year's program**—Several major improvements to an existing runway, 14R-32L, are urgently needed. The city expects to award a contract for them soon, with completion scheduled by the end of this year. Cost is expected to be close to $3 million—financed by state and federal funds.

This runway will be extended 840 ft at the southeast end. It's now 8,000 ft long by 200 ft wide. It was completed last year as one of the tangential runways in the original plan. About 500 ft at the northwest end will be reconstructed in concrete designed for take-offs. The existing 100 ft wide parallel taxiway also will be extended to the northwest end to improve the efficiency. Warm-up pads will be added, along with 12.5 ft shoulder stabilization, high-speed turn-offs, drainage and necessary conventional lighting.

To permit O'Hare Field to function as an international airport, temporary customs and immigration offices are being provided in an existing building near the passenger terminal. The quonset hut type of building, with 12,000 sq ft of floor area, formerly served as an air freight terminal.

• **Engineers in charge**—The entire program of enlarging and improving O'Hare Field is under supervision of the city's Bureau of Public Works and the Bureau of Aviation. George L. DeMent is Commissioner of Public Works, and William E. Downes, Jr., is Director of Aviation.

Naess & Murphy is preparing designs and specifications and will supervise the new construction. Carter H. Manny, Jr., is project manager, Stan Gladych is chief designer, Walter Metschke is chief civil engineer, and Harry Kagamaster is chief electrical engineer.


UNSURPASSED...
for
loading
operations
HENDRIX DRAGLINE BUCKETS
"A Type for Every Digging Purpose"...
¼ to 90 Cubic Yards-Perforated or Solid
HENDRIX MANUFACTURING COMPANY, Inc.
MANSFIELD, LOUISIANA
Hendrix
Lightweight
DRAGLINE
BUCKETS

Prefabricated DoxPlank
Floor and Roof Systems
conform to approved building practices
Army, Navy and FHA Requirements

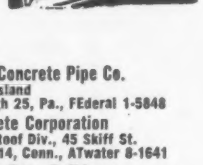
Millions of Square Feet Installed on MONEY-SAVING *"TIME-TABLE"* SCHEDULES

"TIME-TABLE" PREFABRICATION	"TIME-TABLE" DELIVERY	"TIME-TABLE" INSTALLATION	"TIME-TABLE" JOB PROGRESS
Tailor-made to specifications	Specified lengths delivered on time	Crane-hoisted and laid in position	Immediate working deck for follow-up trades

The millions of square feet of DOXPLANK used in modern building indicate a definite movement to more closely calculated "TIME-TABLE" construction — TO SAVE BOTH TIME AND MONEY.

These reinforced concrete planks are prefabricated with approved load-bearing capacities to exact dimensions for predetermined spans. "TIME-TABLE" delivery and installation provide immediate working deck for following trades. High-speed job progress is assured with minimum field supervision.

DOXPLANK have built-in camber to assure minimum deflection. They have high fire safety and sound insulation. Longitudinal channels reduce weight and simplify installation of conduits and piping; also are used as warm or cold air ducts.
Write for complete literature.



Consult with these members of The DoxPlank Manufacturing Association

Baltimore Concrete Plank Corp.
Pulaski Highway & Race Road
Baltimore 21, Md., MUrdock 6-2100

Baltimore Concrete Plank Corp.
1214 Commercial Trust Building
Philadelphia 2, Pa., LOcust 8-2390

Cleveland Precast Floor & Roof Div. The Cleveland Builders Supply Co.
Reeves and Bayerle Road
Cleveland 5, Ohio, Phone VU 3-5456

Dox-Block System
106 Broadway Street
St. Paul Park, Minnesota

Doxplank of Illinois, Inc.
135 South LaSalle St.
Chicago 3, Ill., RAndolph 6-2780

Dox System of Pennsylvania
Box 427
Portage, Pa., Portage 8503

Knox Concrete Products, Inc.
4918 Kingston Pike, N.W.
Knoxville, Tennessee

Maule Industries, Inc.
5220 Biscayne Boulevard
Miami, Fla., PLaza 1-6631

Mid-State Concrete Plank, Inc.
Hamilton, N. Y., Phone 420 & 799

Wm. Moors Concrete Prod., Inc.
Fraser, Mich., Prescott 5-7000

Multiplex Concrete Co., Inc.
64 Glenwood Place
East Orange, N. J., ORange 2-1300

Nabco Plank Company
Terra Cotta
Washington 11, D. C., TU 2-1700

Neville Concrete Pipe Co.
Neville Island
Pittsburgh 25, Pa., FEderal 1-5848

Plasticrete Corporation
Floor & Roof Div., 45 Skiff St.
Hamden 14, Conn., ATwater 8-1641

Schaefer Bros. Builders Supply Co., Inc.
1025 Chili Avenue
Rochester 11, N. Y., GEnesee 8-3460

Vander Heyden, Inc.
5633 West National Avenue
Milwaukee 14, Wisc.

Are You Interested in Working Overseas?

Here are some of the questions encountered by American engineers working for one U. S. architect-engineer firm building airbases in England, and how these problems—generally applicable to Americans anywhere in the world—were resolved.

- ☑ Will you sign a contract?
- ☑ How will you travel?
- ☑ Where will you live?
- ☑ How will you acquire necessaries?
- ☑ Will your children attend American schools?
- ☑ What will your income tax liabilities be?
- ☑ Will work permits and visas be required?
- ☑ Will banking facilities be available?
- ☑ Do you orient easily to local laws and customs?

Grad-Seelye — an architect-engineer joint venture that has designed and supervised construction of U. S. bases abroad—has analyzed its operations and come up with some pertinent findings. The combine of Frank Grad & Sons of Newark, N. J., and Seelye, Stevenson, Value & Knecht, of New York City, concludes that an AE operating overseas can:

- Readily provide suitable personnel to perform supervision and inspection services on diversified construction activities.
- Be in operation abroad within 30 days, given adequate time before signing a contract to analyze conditions affecting services.

Technical problems encountered by American AE ventures abroad are well documented in files maintained by the U. S. Air Force. But no records exist, this joint venture finds, to describe in detail the activities of setting up and maintaining a completely new organization in a foreign country—the problem, particularly, of hiring American personnel and keeping them hired on overseas assignments.

Grad-Seelye's analysis of its own experience in Britain during the last three year documents such data:

I Employees Abroad

• **U. S. personnel**—Many administrative problems of supplying personnel detailed in this analysis are peculiar to the United Kingdom, while other problems are applicable to work elsewhere in the world.

Recruitment before the contract is signed is necessary but final commitments should not be made until the contract is signed. Only after the notice to proceed was issued did recruitment become firm and were the names of those going to England entered on the organizational chart.

Between the notice to proceed and the effective starting date, the managing partner, project manager, two engineers and the administrative assistant were in England making technical and administrative preparations.

Most of the employing was done stateside, with preference given to men in the home office, then to men with previous experience with the joint venture, and finally to those whose previous experience record could be checked through personal contact by the personnel manager. Of the 49 men on this job, 18 fall within the "previously employed by Grad-Seelye" category.

The requirements for men are rather high (degree, license and 10 year's experience or equivalent) and much time and effort went into screening, investigating and interviewing of prospective staff. Each engineer, before hiring, was interviewed first by the personnel department, then by a partner or partners experienced in that engineer's particular field. The time and care spent at this stage have reflected themselves in a low turnover rate.

• **Employment agreements**—Each man is required to sign an employment agreement prior to his start on the job. For later modifications in salary or job, the project manager writes letters to the individual that become part of the original agreement.

While the employment agreement stipulates that money may be withheld from the employee's salary for return trip fare, it has not been the practice of the joint venture to do this and no difficulties have been encountered.

While most items are in the agreement, some are covered by a verbal understanding. The most important is logistic support. The men are advised that support will be provided during their stay in England, and they accept the job with that in mind. Future employment agreements will cover this item in detail.

At the termination of employment, a release is signed by each man in the project manager's office in England. The project manager then passes over the final check—such as salary and allowance for air fare if the employee elects to travel some other way.

• **Overseas transportation**—Transportation to London, usually by air, is arranged by the personnel department through a travel agency. The initial travel was all by air and special arrangements with the airlines had to be made because the summer tourist traffic was approaching its peak.

The usual pattern is for the engineer to arrive first, find housing, and then have his family follow by steamer. Family travel is at the individual's expense.

Excess baggage charges, within reasonable limits, are reimbursed as are charges for medical examinations, passports and incidental costs. Baggage following after arrival is sent through Army Postal Service.

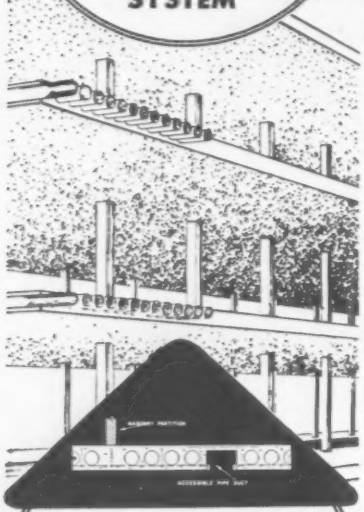
Personnel returning to the States usually make their own arrangements. (Most elect to go by ship.) In this case the firm reimburses the individual at the current air travel rate plus a two day allowance for delay in route. This reimbursement is a check in dollars.

• **Indoctrination**—The new arrival first goes to a hotel in London where reservations have been made by the administrative assistant. He then reports to headquarters at Northolt, where the project manager briefs him on the general work arrangements, duties and suit-

stronger, lighter
more economical

concrete floors
and roof decks
with new revolutionary

*TUBE SLAB
CONSTRUCTION
SYSTEM



- Reduces construction costs
- Reduces floor thickness
- Lightweight
- Provides recessed ducts for mechanical installations
- Vibration-resistant—fireproof and soundproof
- Unlimited flexibility of design

*Trademark

Proven in actual use in over $50,000,000 of construction—typical installations are—I.B.M. Building, Hartford, Conn., Manchester, Conn. High School, Highway bridges in many states.

Tube Slab construction is in a patent pending status. The Tube Slab Company is exclusive licensee. Users without license are potentially liable for life of structure.

Authorized tube manufacturers can furnish license with invoice. For your protection insist on license signed by A. J. Macchi, the inventor (re E.N.R. May 29, 1952). Write for details.

PAT. PEND. U.S.A. AND CANADA

THE TUBE SLAB CO.

57 FARMINGTON AVE., HARTFORD, CONN.

. . . Income tax exemption provides incentive

able conduct in the host nation. The new man is thus introduced to his job and the people with whom he will deal.

Processing then commences to provide the employee with identity, post exchange and commissary cards. He obtains an English driving license by presenting a U. S. driver's license, and gets clearance from the car-hire firm.

Within two days after arrival, he is ready for work.

• **Housing and weather**—Two items that caused the most dissatisfaction were housing and weather. The latter is notorious with its dampness, rain and fog. Many were inclined to think that their health suffered. Lack of central heat and the futile attemps to heat with coal, wood, gas, electricity and kerosene worsened this attitude. The outside temperature range is much less than in the U. S. but the high humidity makes the near-freezing weather uncomfortable.

The available housing generally is acceptable. In style, the houses range from 17th Century thatched roof cottages to post-war modern. All houses had to be rented furnished since it was not economical to ship household goods from the States. Furnished houses were not subject to control and rates were as high as the market would bear. The average house rent near London is $170 per month exclusive of utilities. Utility bills average about $33 per month.

Air Force housing offices helped in providing leads to available housing in the heavily populated areas. They also provided the Military Release Clause, which was modified to cover the employees of the joint venture so that 30 day notice could break a lease.

• **Logistic support**—From the start it was made clear by the Air Force that logistic support would be available to the U. S. joint-venture personnel. With this support, recruitment was made easier and encouraged men to come on this job.

Support consisted of access to Air Force exchanges, commissary, Army postal service, banking and medical facilities. Out patient medical facilities are provided free but hospital rates are $19.75 per day. Even at this cost, treatment by American doctors and with American paraphernalia was considered more desirable than the free British National Health service. No contribution to the British health plan was made by U. S. personnel.

This support permitted the men to participate in all normal airbase activities, emphasizing to the AM that these were a part of the USAF and not a subordinate group. The psychological value of emphasizing this position made the job of being the representative for installations an easier one to sell. It also established to other offices of Her Majesty's Government that they were an integral part of the USAF and eliminated problems of working in Britain or paying British taxes. It, in fact, encouraged family men to come and stay in England, reducing turnover. Single men were in the minority.

• **Income tax**—A major incentive for overseas work has been the provisions of Section 911(a)(2) of the 1954 Internal Revenue Code, which permits tax free income—up to $20,000 per year—if the citizen has been in a foreign country or countries for a total of 510 day during any 18 consecutive month period.

The employee stipulates to the accounting section whether he will meet this condition and whether income tax deductions should be made.

• **Work permit**—The British government does not permit foreigners to stay indefinitely and enter employment without permission. It is necessary to request in a letter to the Under Secretary of State for the Home Office for each man, approval for a year's stay to work for the joint venture.

Permission is granted through a stamp placed in the passport that gives the date until which the stay is granted, states the employee's position or title and specifies that the employee can only work for the joint venture. This endorsement must be shown to the local police and repeated each time the bearer returns to England from a trip outside the country.

• **Leaves**—Annual leave must be taken during the life of the contract. An attempt has been made to have the men take their vacation during the winter months when construction is slow. This has been only partially successful, and the vacation schedule is jammed up with people taking time off in May and June. A new policy will be tried in future contracts to encourage winter vacations: Each man will get three weeks instead of two—one of which must be taken during the winter. The extra week will permit leaving England's winter climate for a reasonably long trip to southern France or North Africa.

Sick leave has been decreased from two weeks to one to maintain a policy of four weeks allowable leave. Experience indicates that one week sick leave is adequate. In addition, the joint venture maintains adequate insurance coverage for protection of its own interest as well as for the individual.

You Name It We'll Make It

Construction fasteners are our specialty. Besides maintaining large stocks of the more popular styles of fasteners used in construction work, we can make almost any kind of special fastener. Special heads, threads, lengths—you name it, we'll make it. Whether you need a dozen or a carload, we're geared for fast service.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

NEW EDITION!

Completely revised to conform to the recently amended A. C. I. BUILDING CODE

REINFORCED CONCRETE DESIGNS—ALL WORKED OUT!

No more algebraic formulas or calculations to make. Simply locate the table covering the member you are designing, apply span and load requirements, and then *read off directly* concrete dimensions and reinforcing steel data. Follows the latest codes and practices. Send check or money order for your copy, today.

Prepared by The Committee on Engineering Practice

OVER 450 PAGES $6.00 POSTPAID

CONCRETE REINFORCING STEEL INSTITUTE

38 S. Dearborn St., (Div. D) Chicago 3, Illinois

Kinnear Rolling Doors

Kinnear Steel Rolling Doors are **Registered.** Full details on every door are held in fireproof vaults. Kinnear Doors *never* become "orphans". Worn or damaged parts are replaced even after **50 years of door service.**

KINNEAR ROLLING DOORS Saving Ways in Doorways

Write for catalog! **The KINNEAR Manufacturing Co.**

1820-40 Fields Ave., Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, Calif.

. . . Working overseas with a joint venture

• **Security clearances**—The contracts require that all U. S. personnel be cleared for access up to the classification of secret. At first, the local Air Force provost marshall did this processing and granted an interim secret clearance while final checks were made. This system permitted each engineer to get immediately into the job, including work concerned with secret material.

Later, the system was changed. Clearance for men now hired in the U. S. must be obtained there; and for men hired in Europe, in Wiesbaden, Germany. Interim clearances are no longer given and it takes more than six months to process a clearance. Attempts to hurry up clearance have to date been unsuccessful.

• **Relocations**—When a change in living area is required (because of shifting construction work loads or the resignation of personnel) all expenses of the individual are paid by the company and administrative leave is granted to permit search for new housing.

• **Turnover**—Turnover has been about 10% per year for Americans. This low rate may be attributed to the logistic privileges, the high family ratio and the presence of American schools.

Only one man was terminated for cause—drunkeness. All other "turnovers" have been by resignation for reasons of health, personal problems, dissatisfaction with the type of work or uncertainties surrounding each contract renewal. Most men and their families feel that a return to the U. S. about every three years is essential.

• **Accidents**—To date no on-job accidents have occurred. Four men have been hospitalized—three for illness and one for an off-job injury.

• **Pay checks**—Each engineer tells the accounting office how he wants his checks handled. Most have their pay made up in two checks, one to a U. S. bank and the other to them in England.

II Facilities Abroad

• **Office space**—The headquarters office space is supplied by the government. The three regional offices are rented because no adequate space was available on USAF property. The rents paid are higher than those paid for comparable space by English firms because of the short rental period. Generally, office leases in England run for at least 11 years and premium payments are necessary to convince the owners they should depart from this system. The average rental is $1.50 per sq ft per year. Utility costs are extra, and in some cases rates (real estate taxes) are extra.

The rented spaces are adequate, but poor by U. S. city office standards. The buildings are old, plumbing is inadequate and central heating is non-existing. Considerable money had to be spent in repainting, new floor coverings, heating appliances, electric distribution and lighting, and installation of shelves.

The yearly average cost for the three regional offices—including rent, utilities, janitorial service, insurance, renovation work and telephone service—is approximately $12,000.

• **Supplies**—Pre-contract contacts with suppliers to provide office furniture for a staff of 54 people were made on notice to proceed; an agreement for one year's hire was made. The headquarters furniture was supplied immediately and the regional offices were supplied as those offices became available.

At the start of the second contract, the furniture was purchased from the rental firm on advantageous terms. All of this purchased furniture is delineated in the contract and will be turned over to the USAF on completion of the final contract.

• **Travel arrangements**—The key to effective coverage of the widespread bases and well spaced facilities on each base is quick transportation. An early appraisal of public service facilities showed that this transportation was not suitable. Automobile travel was considered to be the only solution.

Comparative studies were made between renting and buying cars. It was found more advantageous to rent, ensuring immediate replacement of cars in case of accident. Under rental new cars are supplied each year, authorized garages for maintenance are set up and, most important, it keeps the architect-engineer out of involved problems in running a fleet of cars.

Few firms were willing to rent cars to be driven 20,000 to 30,000 miles a year. Finally, one of the largest firms made a satisfactory proposal and, on notice to proceed, a contract was signed (this includes insurance, maintenance and turn-in conditions for less than one-year useage). It supplied Ford Consul and Hillman Minx cars immediately and kept pace with arriving personnel.

For the first contract, 25 cars were supplied, to be used by 33 engineers. Each project supervisor was given a car and the rest were designated "pool" cars. This arrangement led to dissatisfaction and inconvenience. As the job progressed it became apparent that the dollar saving in cars was out of proportion to the bad features. Therefore, in later Contracts the number of cars

From MINNESOTA to the "BIG MO"...

Manitowoc dragline digs 400,000 yards per month. Easily dismantled for major moves.

Using a Manitowoc Model 4500 dragline equipped with a 7-yd. bucket and a 100′ boom, the Luhr Construction Company of Columbia, Ill., averaged 400,000 yards of black dirt per month on a river cleanout and widening project near Beltrami, Minn. Right after this job the big Manitowoc was dismantled in only four days, shipped to Sibley, Mo., and then reassembled in less than three days. At Sibley the 4500 drag worked on a 180′ — 220′ wide, 23′ deep channel diverting a section of the Missouri River.

The big capacity Manitowoc 4500 is easy to ship and easy to assemble, making long distance moves like this both practical and profitable. By using both the mast and boom during tear-down and reassembly, the 4500 is practically a self-dismantling unit.

Despite its size, this Manitowoc is fast. Simple design and good balance contribute to fast cycles and heaped buckets. The Luhr Construction Company's machine averages two passes every minute — faster than a smaller 3-yd. rig working with the Model 4500.

There's no complicated electric motors — no restrictive trailing cable to hinder mobility. Unit drive, composed of a single diesel power package, gives you unmatched on-the-job mobility seldom found in a machine of this size. Mobility that lets you use the 4500's capacity to profitable advantage on any job.

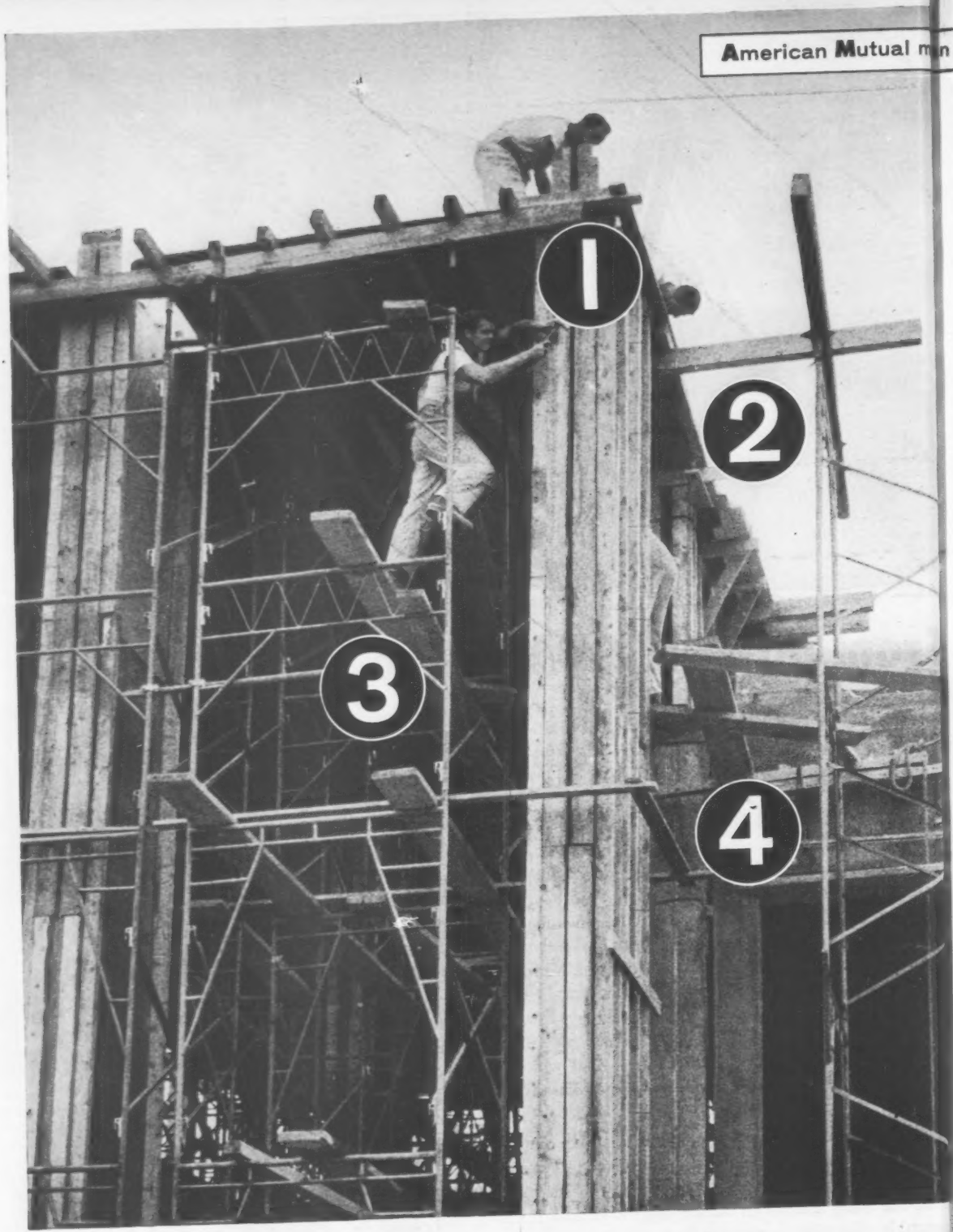
Here's a real powerhouse with the mobility of units having much smaller capacities. Find out how the Manitowoc 4500 will fit *your* jobs. Your helpful Manitowoc distributor has all the details.

Manitowoc Engineering Corp., Manitowoc, Wis.

SHOVELS 1-5½ YD.

Manitowoc

CRANES 20-100 TON



American

tual m help you cut costs . . . save lives and time

What might happen to these men... one second from now!

Lives, limbs, dollars could be lost IF...

1. The formwork collapses
2. One of the men falls
3. A scaffold plank breaks
4. Falling material hits a man

On any job, friendly AM men can help you cut costly accidents . . . give you expert insurance counsel!

Erecting formwork—as the men in the photograph are doing—is a routine construction job. But any successful contractor knows an accident on this kind of job could take away lives—and profits, too.

On this job as on any project, AM men can help the contractor set up a safety plan to prevent costly accidents—as well as design an insurance program to cover every hazard at the lowest possible cost. Working with the contractor and his job superintendent, the AM Safety Engineer helps find the way to get the job done with the greatest safety, speed, and profit. His down-to-earth safety suggestions help guard workers against hazards . . . lower construction and insurance costs. Should a worker be injured, other AM men handle the claim promptly and fairly . . . and restore the man to work as quickly as possible.

By teaming up with AM men, contractors in every field have saved lives and limbs . . . earned substantial savings through lowered insurance costs plus dividends . . . gained a reputation for reliability . . . all keys to becoming the successful bidder. Good reasons to call in your *friendly* AM *man* before you make your next bid. American Mutual Liability Insurance Company, Department EN-4, 142 Berkeley Street, Boston 16, Massachusetts.

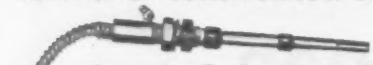
Leading writers of Workmen's Compensation, all forms of Liability, Crime and Accident and Health Insurance

Your friendly AM man can advise you on all your liability insurance needs

American Mutual LIABILITY INSURANCE COMPANY

TRU-LAY *PUSH*-PULLS

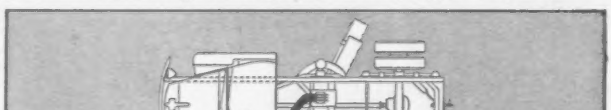
give trouble-free, lifetime service for remote control of construction and quarrying equipment



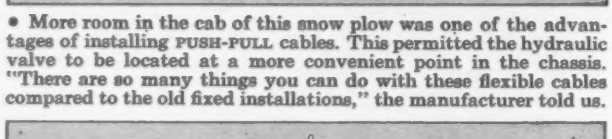
Operators of Construction or Quarrying Equipment can be certain of maintenance-free service from TRU-LAY PUSH-PULL CONTROLS because of their precision manufacture—rugged construction—lubrication for life of the inner, working member at the factory—complete sealing of the entire unit (a vitally important factor in tough, outdoor operations) against dust, dirt or moisture.

We have never heard of a TRU-LAY FLEXIBLE PUSH-PULL CONTROL *wearing out in normal service.* Examples of heavy-duty applications are shown below. Users of such equipment benefit from simplified equipment design and improved operation.

• Shown here is a tandem roller where two different PUSH-PULL cables are used to facilitate operation. One cable, 156″ long, is capable of a 2″ stroke to operate the hydraulic steering valve at the front of roller. The second, shorter cable operates tail shaft governor which keeps roller speed constant, upgrade or down.



• More room in the cab of this snow plow was one of the advantages of installing PUSH-PULL cables. This permitted the hydraulic valve to be located at a more convenient point in the chassis. "There are so many things you can do with these flexible cables compared to the old fixed installations," the manufacturer told us.



• Raising and lowering of the dump body on a famous line of hydraulic dump trucks is via TRU-LAY PUSH-PULL cables. With PUSH-PULLS this merely entails the pulling of a button on the dash. The installation did away with cut-up floor boards and levers in the truck cab. TRU-LAY PUSH-PULLS brought easier installation, more convenience and less maintenance.

***Look for* PUSH-PULLS** *on the heavy equipment you buy. It will be easier to operate and less costly to maintain. For complete information we'll be glad to send you this* DATA FILE . . .

ACCO

AUTOMOTIVE and AIRCRAFT DIVISION

AMERICAN CHAIN & CABLE

Push-Pull DATA FILE

601-F Stephenson Bldg., Detroit 2

2216-F South Garfield Ave., Los Angeles 22 • 929-F Connecticut Ave., Bridgeport 2, Conn.

was increased to 33—to be used by 37 engineers—resulting in a more satisfactory arrangement.

Most driving is done over fair secondary roads, the lack of speed laws outside builtup areas makes driving hazardous.

Accidents are numerous, but no serious injuries have been incurred. During the first two years one accident per car was the average—some minor, some serious enough to junk the car. The joint venture pays for the first $28 of each repair job, and most exceeded that figure. Because of the high accident rate insurance premiums have increased $14 per car.

Gasoline is purchased at 67 cents per imperial gallon. This price jumped to 84 cents during the Suez crisis, but dropped when controls were lifted. Fortunately, the USAF included the needs for the architect-engineer in coming to agreement with the British on petrol allocations during rationing and little inconvenience was experienced in the winter of 1956-1957. Each month about 1,000 rationing coupons had to be accounted for.

The rental company invoices the joint venture in sterling and payment is made from the U.S. accounting section with an equivalent dollar check.

Between the widely spaced offices, train travel is used. Though the British Railways are not renowned for cuisine, they are fast, comfortable and sometimes on time.

Commercial and military planes are seldom used.

• **Local personnel**—For a joint venture of considerable size, some local personnel are indubitably needed. A local agency may be retained to hire as well as to manage salaries, tax returns and health insurance records for these individuals. In this manner, the American joint venture group does not appear in the foreign government records as an employer. The arrangement is desirable from a tax standpoint.

III Liaison

• **Stateside liaison**—To bridge the geographical gap, it was agreed that a certain number of visits should be made by a principal of either firm each year.

Contract I called for 24 weeks of partner time in England. This amount of time was deemed unnecessary and the contractual requirements in the next two contracts stipulated one visit every three months, which has been satisfactory.

The two week visits usually are made by a managing partner, who confers with and advices the project manager

d high cost gas

and regional managers. He visits the headquarters and regional offices, inspects work in progress at various stations, and discusses general problem areas with the military staff of installations.

Daily activity of the staff are recorded by the project manager and mailed to the States, in addition to monthly reports or letters on special items.

• **Negotiations with USAF**—The joint venture is represented by B. R. Value, and A. Wilson Knecht of Seelye, Stevenson, Value & Knecht, Howard Grad and Stanley C. Brogren of Frank Grad & Sons, and the project manager and the assistant project manager.

About five months prior to the expiration of each contract, discussions are held between the project manager and the military to determine requirements for the next contract. A formal request for a proposal is then prepared by the contracting officer and sent to the joint venture. A proposal is prepared by the project manager, coordinated with the managing partner and submitted.

The project manager has been designated as attorney-in-fact by the joint venture firms in order that he may sign contracts with the USAF. Copies of the powers of attorney are filed with the contracting officer.

• **Legal assistance**—To insure compliance with British laws, in regard to employment of British staff, contracts with British landlords and suppliers, and responsibilities for taxes, a firm of London solicitors was retained. Its advice, however, was most valuable only prior to and during the early stages of the job.

• **Banking**—A sterling checking account is maintained with the London branch of Chase Manhattan Bank for office business. Each month a stipulated amount in dollars is transferred from New York.

Checks are drawn for payment of British bills and for the petty cash fund.

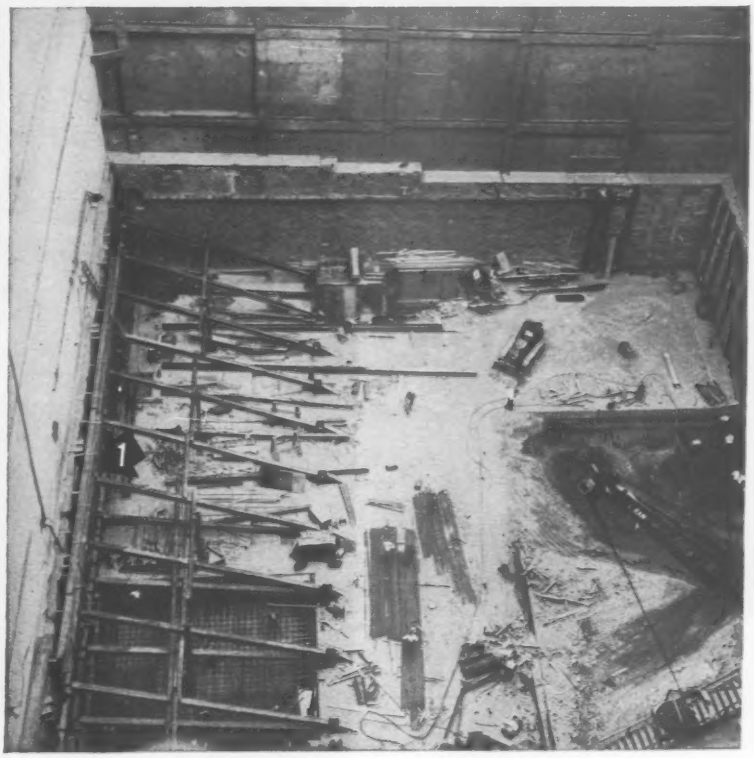
When the account is finally closed out, the sterling balance will be converted to dollars and sent back to New York.

U. S. personnel make their own banking arrangements—usually with the American Express Co., where deposits are made in dollars and withdrawals may be made in sterling, military certificates or dollar traveler's checks.

Managing partners for the joint venture in Britain are Burnside R. Value and Howard Grad. The project manager is Kenneth D. Wheeler.

ANOTHER PROBLEM SOLVED BY SPENCER, WHITE & PRENTIS

3-SHIFT SCHEDULE SPEEDS FOUNDATION FOR JORDAN MARSH



1. EXISTING STORE UNDERPINNED AND BRACED. STREET BRACING DOES NOT SHOW IN THIS PICTURE. MINIMUM DEPTH OF CUT 30 FT. AREA 125 x 180 FT.

Project: Rebuilding Jordan Marsh, Boston Department Store, a section at a time.
General Contractor: Vappi & Co., Inc., Cambridge, Mass.
Architects: Perry, Shaw & Hepburn—Kehoe and Dean, Boston.
Engineer: Maurice A. Reidy, Boston.

This job is being done in separate sections, so that Jordan Marsh can continue business during construction. Shown here is the foundation for Section III, handled (as were the others) by Spencer, White & Prentis. Since completion was desired in time for the store's holiday-selling season, our men and machines worked round-the-clock for 3 months to excavate and pour mat on schedule. Photo shows the methods used to prevent movement of adjacent buildings and streets.

CATALOGUE ON REQUEST

Spencer, White & Prentis INC.

FOUNDATIONS • PILING • UNDERPINNING • SHORING • COFFERDAMS • SPECIAL SERVICES

10 EAST 40th STREET, NEW YORK 16, N. Y.

DETROIT: 2033 PARK AVE. • CHICAGO: 228 NORTH LaSALLE ST. • WASHINGTON, D. C.: TOWER BLDG.
OF CANADA: 700 BAY ST., TORONTO • 2052 ST. CATHERINE ST. WEST, MONTREAL

THE PROBLEM:

Building apartments over highway with minimum of traffic interference.

1 Steel piles were erected from barge that also delivered them

Here's how they did it . . .

Piles by Water, Girders by Land

Building an apartment over a highway has called for unusual design and erection on New York City's East River Drive.

Loads from the river half of the building frame were shifted from the regular column system to one that carried the loads across a 78 ft highway running beneath it. These loads had to be taken down to safe bearing.

Construction today is the result of an easement made 20 years ago. The city considered it cheaper to buy an easement for the drive than to pay for condemnation of the entire property. The owner retained access rights for future construction over the drive.

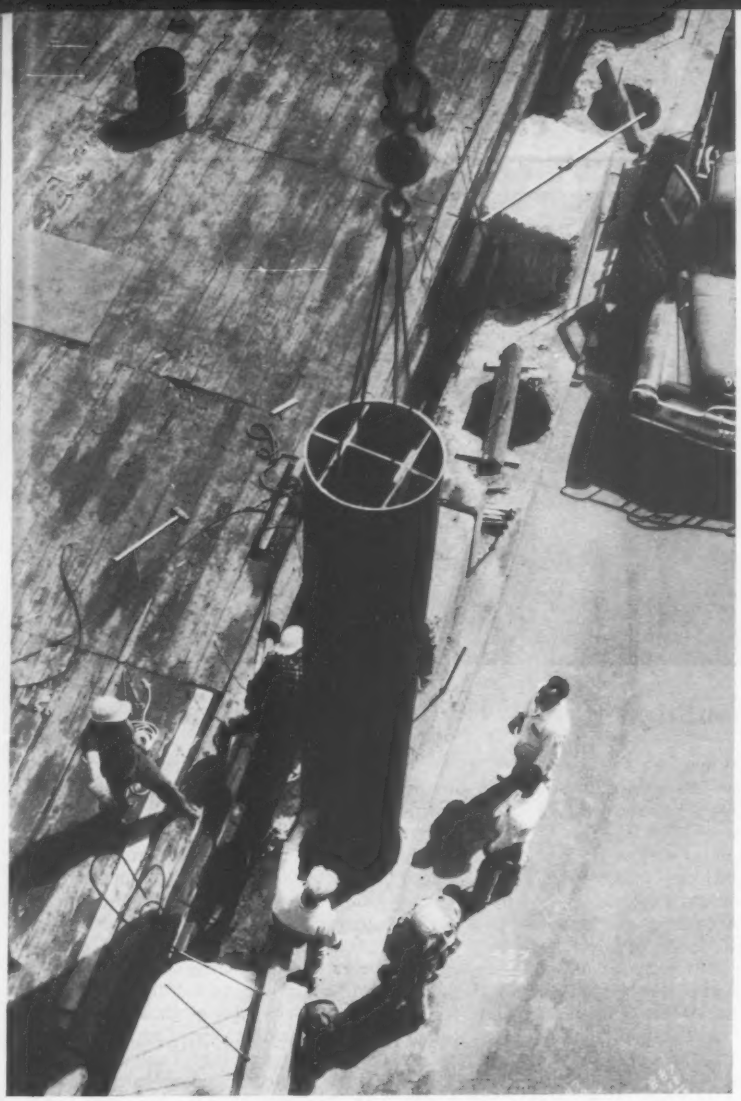
Under terms of the easement, the highway retaining walls were designed to support a building. Placing billet plates for the column lines on the land side and center of the highway was simple. The parapet walls of the drive were removed and the billet plates set on the foundation walls beneath. Solid rock was just below.

However, the river wall was a problem. Bedrock was 25 to 40 ft below the highway here. Considering the distance and the sharp slope of the rock, the wall on it wasn't considered sufficient to carry the loads of the building above it.

The solution was to bypass the wall. Five 34 in. dia holes were cored down through the retaining wall. Heavy 14WF sections braced top and bottom inside 30 in. dia steel casings were fabricated as piles to pass the building loads down to rock.

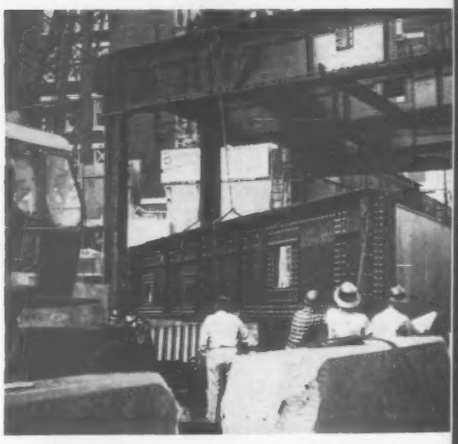
The piles were delivered and placed by barge. Then they were filled with concrete and cushioned in the holes with sand. The barge also brought in columns, bracing and some of the girders. The heaviest girders, 5 ft 2 in. deep and weighing up to 25 tons, were trucked onto the drive during weekends when traffic was shut down. Two weekends were needed to complete erection.

Architect is Paul Resnick with associate architect Harry F. Green. Gross Brothers is the builder. Weinberger, Frieman, Leichman & Quinn is the structural engineer. Harris Structural Steel Co., Inc. is the steel subcontractor. All are from New York City.

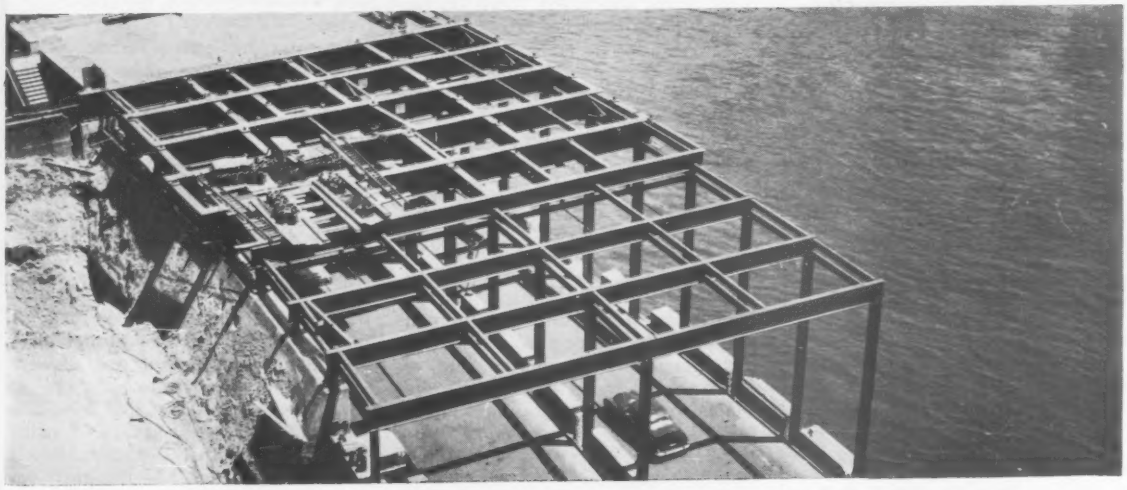


2 Holes for piles were cored through retaining wall to bedrock

3 Crews lowered piles 40 ft. through wall to bedrock



4 Steel erection over roadway took only two weekends



5 Substructure frame will carry regular apartment superstructure over the highway

Cut lighting costs

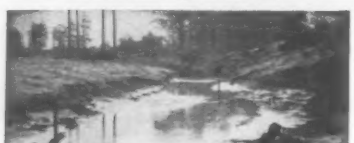
Onan
DIESEL ELECTRIC PLANTS

Save you money every hour. Pay for themselves quickly on big lighting jobs. Built for rugged service with extra-large bearing surfaces, Stellite exhaust valve seats and other long life features. Engine and generator direct connected . . . no belts or couplings. 3KW, single cylinder; 5KW, two-cylinder. Standard voltages.

Gasoline Models: 500 to 150,000 watts a.c.
Write for folder of portable models

D. W. ONAN & SONS INC.
2900A UNIVERSITY AVENUE SOUTHEAST
MINNEAPOLIS 14, MINNESOTA

GOT THIS?
(Predraining Problem)



GET THIS!
(Skilled Wellpoint Engineering)

From

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
West Palm Beach, Fla

Insulated Forms Protect Winter Pour

When last winter's colder-than-usual freeze threatened to stop work on the Niagara section of the New York Thruway at Buffalo, N. Y., a contractor came up with some remedies he claims saved him about four months' construction time.

According to job superintendent Earl Maurer of Johnson, Drake & Piper, Inc., Minneapolis, an insulating blanket provided the best answer for the problems. With temperatures hovering in the zero range for days at a stretch, work still went on under all but the most impossible conditions.

Balsam-Wool insulators acted like a blanket that was kept in place between forms and walers. Men on the job say the insulators were easy to put in place, and once there were durable enough so the forms could be re-used many times without wearing out the insulator.

The one delicate feature of the operation was the careful checking of temperatures during the curing period, since the heat of hydration could cause damage to the concrete if it got too high. The resident engineer, Bill Sage of Handesty & Hanover, New York City engineering consultants for the job, kept a careful guard over the temperatures. To provide a foolproof check, both thermometers inserted into recesses in the concrete and a thermocouple were used to measure temperatures during the curing period before the forms were stripped. A close correlation between the two temperature readings was noted—a matter of only one or two degrees temperature difference. Highest temperature attained during the blanketing operations was 120° F.

Another part of the operation that required careful attention was having concrete at the proper temperature during placement. To attain the specified temperature, (ranging between 50 to 60 deg F) aggregate had to be steam heated at the batching plant. Cement and water were added at the job site to get closer mixing time control, although mixing was done in concrete mixing trucks that hauled the aggregate. State inspectors were firm on the concrete testing, so that careful coordination and planning of pours were required to assure the best quality concrete.

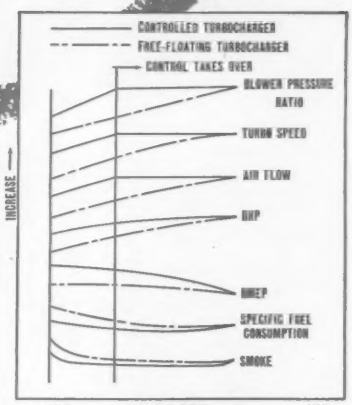
Specifications called for 3,000 psi concrete at 28 days. The contractor actually produced 4,000 to 6,000 psi concrete in 28 days. A 6½ bag mix that gave a slump of 2 in. was used throughout the operations.

When state authorities were convinced the job could be done every bit as well without using heated housings, specifications for the insulation were drawn up for cold weather concreting.

In general, a 2 in. insulating blanket was specified for pours of less than 24 in. thickness; for pours greater than 24 in., a 1 in. blanket was allowed. Cell-U-Form (or approved equal) as manufactured by Wood Conversion Co., St. Paul, was specified. Finally, thermal conductivity of the blanket had to be not over 0.27 Btu sq ft per hour per deg F temperature difference between the two surfaces.

NOW!
CONTINUOUS, FULL POWER TURBOCHARGING

AiResearch control system keeps turbocharger output at ideal level



Improved performance characteristics of a typical turbocharged diesel engine equipped with the new AiResearch Turbocharger Control System.

Accurate control of turbocharger speed over its complete range regardless of changing load characteristics has been achieved with the new AiResearch Turbocharger Control System. This automatic control system delivers more air to the engine when needed and greatly increases torque rise, giving turbocharged diesel engines greater lugging ability when operating under heavy loads. By contrast, free-floating turbochargers operate at reduced RPM when the engine is working at below-maximum engine speed.

This improved air delivery system greatly increases the acceleration, for example, of turbocharged diesel trucks up steep grades. In a typical case, the round-trip time of a trucking company operating between Phoenix and Denver was cut from 48 hours to 42 hours. Over short hauls an off-the-road truck cut its 27-minute round-trip time to 18 minutes. Comparable gains are made for all types of turbocharged diesel equipment, stationary or mobile.

The two components of the new control system are a pressure ratio sensor and an exhaust by-pass valve. They control the speed of exhaust-driven turbochargers by modulating the amount of engine exhaust used. This eliminates overspeeding of the turboblower, and at the same time provides higher turboblower speed while lugging. Smoking is virtually eliminated under all conditions.

Your inquiries are invited.

THE GARRETT CORPORATION

AiResearch Industrial Division

9225 South Aviation Blvd., Los Angeles 45, California

DESIGNERS AND MANUFACTURERS OF TURBOCHARGERS AND SPECIALIZED INDUSTRIAL PRODUCTS

BEFORE SLIDE, area is outlined (dotted line). Slide disrupted canal boat traffic, near Gota, Sweden nearly five months.

AFTER SLIDE new canal (solid lines) followed trough formed in mass as it slid. Old route was dredged as temporary by pass.

13 Million Cu Yd Landslide Cuts Canal

These remarkable photos of a 13 million cu yd landslide in Sweden were recently made available to ENR. The slide occurred in June, 1957, when the loam clay mass shown blocked the Trollhatte Canal, near Gota in southeastern Sweden.

The canal, an important artery, was closed for four weeks and it was five months before it was completely restored. And concern extended beyond the immediate blockage since most of

the country's canals pass through areas similar in geography to the Gota region —steep mountains with the rivers and canals cutting through valleys of heavy sedimentary deposits.

Within 24 hours of the slide a study of aerial photos resulted in a plan to dredge a temporary channel along the route of the original canal to release 100 craft trapped above the slide. A new channel was to be excavated parallel to the old canal to take advantage of a trough formed in the earth mass as it moved. This would keep the temporary bypass open while the new route was dredged. Also the new canal would straighten out a dangerous bend in the waterway that had always caused navigation difficulties. The earth to be cleared was about the same as if the old canal was restored.

Four days after the slide two dredges were at work on the bypass. In four weeks about 85,000 cu yd were removed in opening the channel and releasing the trapped boats.

Two German dredges were employed to help excavate the 1.3 million cu yd needed to make the new channel. The new route, opened to traffic in five months, is 22 to 23 ft deep and from 210 to 280 ft wide. The restoration cost about $200,000.

The slide was Sweden's second major one in seven years. Sweden has started an extensive research program into the possibility of future slides and methods to prevent their occurrence.

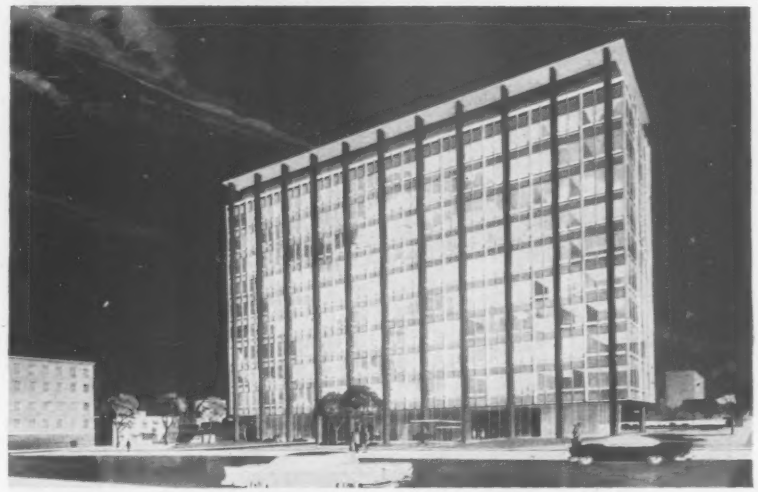
Nuclear Site Chosen

Subaqueous line will link British, French power grid

A site has been chosen for a British nuclear power station that will be linked with France's electric power system through a planned cross-channel power cable. When completed, it will be the first power cable to be placed in the English Channel.

The only longer underwater power cable, in use for the last four years, crosses from the mainland of Sweden 70 miles to the island of Gotland in the Baltic Sea. The longest overhead cable spans the Straits of Messina, Italy, some 12,000 ft on steel towers that are 735 ft high.

The proposed nuclear station, the fifth such station in Great Britain, will be located at Dungeness, Kent. It will have a capacity of about 525,000 kw. It will connect with a 275,000 v transmission system that will be linked to the French system.



In new 11 story welded-frame now being fabricated . . .

Girders Span Building Width

The new Toronto headquarters of Union Carbide Canada Ltd., will be framed with what might be the longest clear spans ever used in a multistory welded steel building. Girders with no intermediate supports will span the full 65 ft width of the 215 ft long, 11 story main tower at all floors and the roof.

General contract bids on the $6 million building will be taken this month. Meanwhile, Dominion Bridge Co., Ltd., is fabricating the superstructure steel under a contract let last August, and Perini, Ltd., (Canada) has been working on the substructures since December.

The long spans will occur in 11 single-span multistory bents comprising the structural steel part of the building frame. Between the bents, which will be spaced 20 ft c-c along the 215 ft length of the building, will be ribbed concrete floor slabs and 3 ft high concrete spandrel walls. Girders and columns will be encased in concrete, both for fire protection and for continuity with the floors and walls.

The 11 welded bents will be identical except for some variations in holes through the girders. As a result it only took five sheets of details for the entire structural steel requirement of 1,830 tons.

Columns are being fabricated in 2 story lengths. Up to the 8th floor, they are welded sections. Above that level, they are 36 in. wide-flange rolled shapes. Splices will be butt welded in the field. The girders are also 36 in. wide-flange shapes. They will be butt welded directly to column flanges to develop full continuity through the connections. A total of nearly 30,000 lbs of welding rod will be used in the shop and field assembly building frame.

Architects for the building are Shore & Moffat, of Toronto.

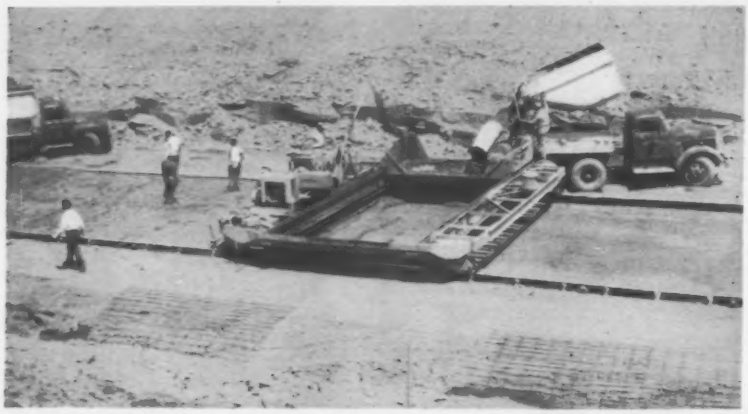
World's Largest Lake

Spanish dam to impound 150 million acre-ft

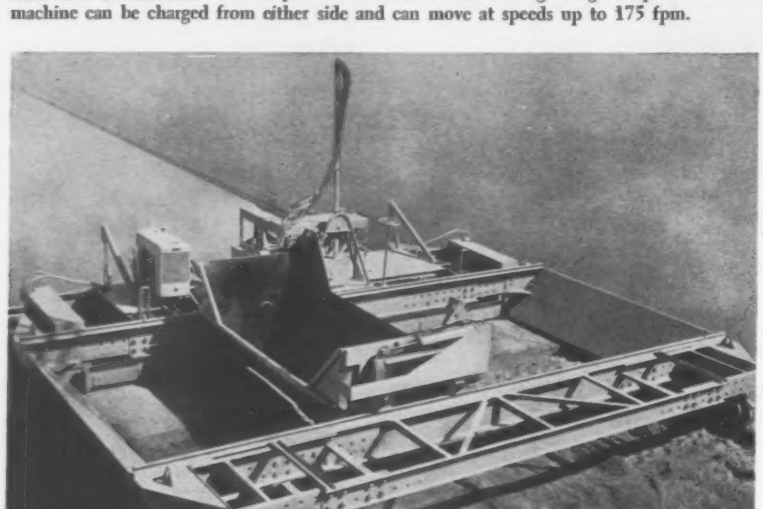
The largest privately owned power company in Spain — Iberduero — has started work on the $50 million Salto de Aldeadavilla hydroelectric project.

The dam, expected to be completed late in 1960, is to be a gravity type 460 ft high. It will be able to hold back 150 million acre-ft of water, thus forming the world's largest reservoir. Largest completed reservoir is Lake Mead behind Hoover Dam at 30.5 million acre-ft, while a 140 million-acre ft lake is under construction at the Kariba site on the Zambesi River in Southern Rhodesia.

Water to turn six 135,000 kva generators will be supplied through 1,782 ft long tunnels excavated in the rock. The power room, 423 ft by 72 ft, and related facilities will all be underground. Rock excavation will amount to approximately 1 million cu yd. The switch room, 333 ft by 35 ft, will house 230 kva transformers. The plant will increase te power output in Spain by 15%.



MAXON SPREADER receives pre-mixed concrete from non-agitating dump truck. The machine can be charged from either side and can move at speeds up to 175 fpm.



PAVING MACHINE is self-propelled, hydraulically operated, and is designed for three basic operations—loading, spreading and strike-off (screeding).

Paver Uses Bucket Spreader

Production has started on a newcomer to the field of portland cement concrete pavement construction. It is a concrete spreader, operating on a new principle, and engineered for handling centrally-mixing concrete from non-agitating dump trucks. Tests on two pilot models were conducted last summer on highway paving projects in Ohio.

Riding on the road forms, the self-propelled, hydraulically operated paver has a 4 cu yd (struck measure) spreader bucket that can be loaded from either side. The 12 ft long, self-cleaning bucket has a top width of 6 ft 3 in., a maximum throat opening of 9 in., and can be made to move transversely or vertically. It also can be tilted, and opened and closed by hydraulic rams.

The bucket opening can be controlled to determine the rate of flow of concrete being placed on the subgrade, while the bucket height is adjustable for placing the concrete to the desired thickness of pavement. The machine is adjustable in widths from 20 ft to 26 ft, in 6 in. increments.

The concrete spreader—designed for operating with the manufacturer's line of "Dumpcrete" handling bodies—has three basic operations: loading, spreading, and strike-off or screeding.

As soon as the bucket is charged with concrete from one of the non-agitating dump trucks, it moves transversely, spreading the concrete to the proper thickness. When the bucket has completed its move across the full width of pavement, the spreader moves ahead to place any concrete remaining in the bucket. As the spreader moves ahead its adjustable strike-off bar screeds the concrete longitudinally.

A single Dumpcrete spreader may be used to place both the base and top courses of wire-mesh reinforced concrete pavement at up to 180 cu yd per hour, according to the manufacturer.

The 8-wheel spreader has four traction wheels. Power is supplied by a four-cylinder heavy duty industrial engine rated at 44 hp at 1,600 rpm. A multiple gear-type hydraulic pump, V-belted to the drive shaft of the power unit, provides independent power to the hydraulic motors for the drive wheels, the bucket winch motor, the bucket operating cylinders and the strike-off bar cylinders.

The 18,000 lb concrete spreader travels either forward or backward at speeds varying from 0 to 175 fpm.

An oscillating type finishing screed—raised and lowered hydraulically, and crowned by mechanical adjustment—is available for attachment. Electric vibrators and generating set for operating them also are available as attachments. MAXON CONSTRUCTION CO., INC., MANUFACTURING DIV., 2600 FAR HILLS AVE., DAYTON, OHIO.

Hollow Shaft Motors Up to 2,000 HP Size

An all-weather climatized vertical hollow shaft motor in ratings up to 2,000 hp now is available. Designed for indoor and outdoor service, the motor can be used for irrigation, public utility and industrial pumping applications.

The compact unit incorporates recent advances in insulating materials to provide resistance to moisture and chemical contaminants.

Two-high angular bearings are used to prevent excessive thrust capacity. For bearing protection the motor has an oil-metering system, sealed bearing chambers and magnet drain plugs that collect foreign ferrous particles in the oil.

A minimum of cooling air is required, permitting low cooling air velocity and preventing dust and moisture from being drawn into the motor. Ninety degree bends in the air flow system pro-

hibit the entrance of snow and rain, while non-corrosive screens keep out foreign matter and rodents.

Self-release couplings prevent unscrewing of the shafting in case of accidental motor reversal. The unit is described in Bulletin No. 2450. THE LOUIS ALLIS CO., DEPT. P, MILWAUKEE 1, WIS.

Paver With New Screed Offers Optional Equipment

An automatic bituminous paver finisher of 10 ton capacity is said to practically eliminate all manual operations.

The Express Paver features principle design changes in the screed, augers, tamper and optional air equipment.

Tamper frames are more ruggedly constructed with heavy steel angles—the new bars being 1 in. thick high alloy steel. Single tamper drive promotes easier maintenance and eliminates synchronization problems and chain drive.

An optional air control system through an automatic air conveyor clutch regulates more closely the material flow to the screed. This option includes an air traction clutch that provides smoother starting and ease of operation, and air-actuated hydraulic brakes for faster, easier breaking. All air option controls on the paver are grouped on a single control tower that can be transferred to either side.

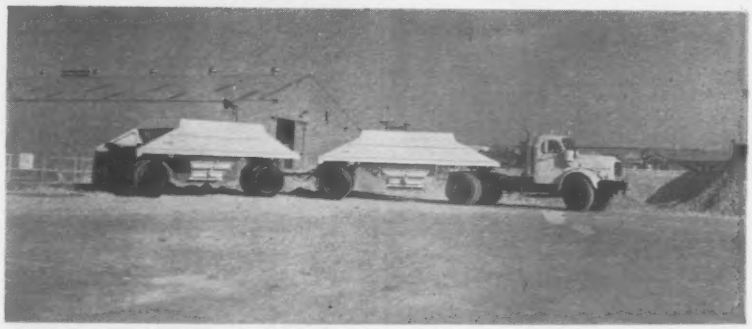
The new augers are of taper design, abrasion resistant for longer service. They are supported in the new hangar arrangement, equipped with sealed antifriction bearings with inboard and outboard locations. They are taped down toward the center to provide more even distribution of mix across the entire width of the screed.

The two separate screed heaters provide a more even distribution of heat to all chamber parts. Each unit then has its own heat, blower and electrical ignition system, resulting in faster heat up with kerosene and fuel. Propane heating is optional. BLAW-KNOX CO., 300 SIXTH AVE., PITTSBURGH, PA.

One-Quarter Turn Controls Small Brass Water Valve

A new valve for pipe-to-hose and pipe-to-pipe connections turns from "off" to full flow in one-quarter turn. Flow can be set for any desired rate.

It has quad ring and "O" ring pressure seals for positive shut off. The complete valve is made from solid bar brass. THE SPECIALTY MFG. CO., 2356 UNIVERSITY AVE., ST. PAUL 14, MINN.



TRAIN of bottom dump units has payload capacity of 28 tons.

SEMI-TRAILER bottom dump can carry up to 35 tons for off-highway work.

Bottom Dump Units Are Light and Strong

Frames of square seamless tubing and lightweight high-strength outer shells make up the bottom dump hauling units manufactured by Cook Bros. The equipment's low silhouette is said to permit easy loading and unloading in a standing position or on the move.

The company's semi-trailer unit has a 35 ton payload capacity for off-the-highway work, while its lightweight bottom dump trains run to 28 ton capacity. COOK BROS. EQUIPMENT CO., 3334 SAN FRANCISCO ROAD, LOS ANGELES 65, CALIF.

Hydraulic Pump Is Activated by Air

A compact compressed-air-operated hydraulic pump, known as the Airhydro, has been designed by Charles S. Madan & Co., Ltd., of Altrincham, England.

There are nine models covering a pressure range from 62 to 22,500 psi. All of them can be operated from a normal compressed air supply of not more than 100 psi. The units weigh from 50 to 80 lb. All models are 12 in. high; diameters vary from 7½ to 12 in.

Air pressure applied to a large air piston imparts a thrust to a hydraulic ram of smaller area and creates a high hydraulic pressure.

An important feature of the pump is its claimed ability to maintain a static pressure indefinitely without consuming air. If the balance is disturbed through a leak or a movement in the power loading machine, the pump automatically will move sufficiently to maintain the hydraulic pressure required. The consumption of air is limited in proportion to the amount of hydraulic fluid being delivered by the pump. According to the manufacturer, there is no wastage through unwanted fluid being relieved and bypassed to drain or to the reservoir.

The pumps are built of non-ferrous or stainless steel, and the air and hydraulic packings are of the fabric reinforced synthetic rubber type, making them suitable for water or the majority of hydraulic fluids. For corrosive liquids, however, special seals can be fitted. DAVIES BROTHERS, GLADSTONE, N. J., U.S. AGENT FOR CHARLES S. MADAN & CO.

Teacher-researcher Kenneth B. Woods is moving up as . . .

ASTM Taps Educator's Talents

The head of Purdue University's department of civil engineering took the reins of the American Society for Testing Materials in Boston last week. He is Kenneth B. Woods—researcher, professor, administrator, consultant. His forte is soils; his field is highways.

The 52-year-old educator brings to his new post as ASTM's president a record of achievement that should suit him for the job. He has been an ardent worker in professional societies since student days at Ohio State University, where he was student chapter president for the American Society of Civil Engineers.

Later years have seen him cast in the roles of secretary and president of ASCE's Indiana Section, member of the Highway Research Board's executive committee, HRB chairman (in 1956) and an active worker in the American Concrete Institute.

He's also been a consultant for the board of consultants, airfield branch, Corps of Engineers; for the North Shore Labrador Railroad Project in Quebec; for Dow Chemical Co., Monsanto Chemical Co. and Iron Ore Co. of Canada.

Last summer he was in Iran as consultant on highway design for the John Mowlem Co. of London. And his current Highway Research Board activities make him chairman of the advisory committee for the $22 million test road of the American Association of State Highway Officials at Ottawa, Ill. (ENR June 19, p. 52).

Professor Woods hails from the state of Washington. He traveled east to attend Ohio State University, where he graduated in 1932 in civil engineering. He continued graduate work there in civil engineering. At the same time, he served as soils engineer for the Ohio Department of Highways. In that job he designed grade slopes and structures for relocating some 125 miles of road in the Muskingum Valley of eastern Ohio. Professor Woods recalls that here he gained valuable soils experience—testing, designing, constructing. During this period he received his professional degree in civil engineering from Ohio State; his thesis, "Soil Mechanics Applied to Highway Engineering in Ohio."

In 1939, Professor Woods joined Purdue University's staff as assistant professor of highway engineering and assistant director of Purdue's Joint Highway Research Project. In many ways this project was a pioneering venture for research in the highway field. Under Professor Woods' direction, the university's Joint Highway Project became a first class research organization, through which 200 graduate students have received their master's and PhD degrees.

His promotion up the academic ladders was steady, and in 1954 he was made head of the school of civil engineering; and director of the university's Joint Highway Research Project.

Says Professor Woods: "While at Ohio State I decided to be a teacher, and I guess it was what I always wanted to do. I have wanted to do research work and to teach ever since I graduated from college. The way to do the most good in engineering (for me anyhow) is to be in the research field."

Professor Woods believes the growth of science makes it hard to predict what civil engineers will need to know in the near future. For instance, he cites the development of new materials suited to specific uses. "In light of the widening scientific spectrum, we, as educators, must give our students a broader basis for professional growth, providing first class scientific undergraduate curriculum and the opportunity to study in research for those best suited and interested in the work," he says.

Professor Woods has developed a concept of undergraduate education at Purdue that emphasizes science, mathematics and engineering fundamentals. But with his teaching staff ("the finest teaching staff assembled in the United States and Canada"), he insists on a curriculum strong in theoretical engineering taught by experienced practical scientists and consultants.

Kenneth Woods, according to colleagues, is a prodigious worker—busy, ambitious and enthusiastic about most anything he undertakes. His mind is active, his memory retentive—particularly in dealings with other people.

He delegates a lot of responsibility to

his associates. Members of his teaching staff do a good bit of writing. His delegation of responsibility enables him to undertake an enormous volume of work.

One of his most recent undertakings is being editor-in-chief of the forthcoming "Highway Engineering Handbook," to be published by the McGraw-Hill Book Co. in the near future.

"Civil engineering is on the threshold of serving mankind in a manner undreamed of a few short years ago," says Professor Woods. "The future is bright but specialization calls for intensive graduate instructions if we are to have continued progress."

Careers

Business

Frank Roodman has been appointed engineering coordinator for missile projects for The Austin Company, engineers and constructors, Cleveland. Previously, he was project superintendent on the $26 million developmental center recently completed by Austin for Boeing Airplane Co.

Walton Seymour, consultant in power economics with the Water Resources Authority of Puerto Rico, and formerly director of power utilization for TVA, has been appointed director of industrial development for Development and Resources Corp., of New York City.

Arthur W. Beauregard has been named senior engineer for the Providence, R. I., Redevelopment Agency.

Sinclair Powell, formerly city manager of Ypsilanti, Mich., is the new slum clearance director for Columbus, Ohio.

A. W. McKelvey, Jr., has been elected vice president of the planning-architectural-engineering firm of Pereira & Luckman, Los Angeles-New York.

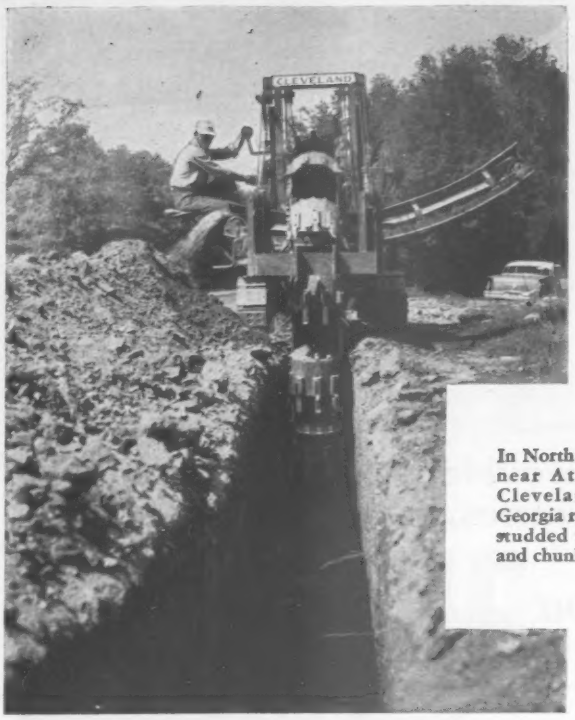
Arthur S. Marvin has been appointed vice president, engineering, of U. S. Steel's American Bridge Division. He succeeds **J. D. Rollins,** who has been named vice president, facility planning, U. S. Steel Corp.

P. L. Griffith, engineer and management consultant, has been named an associate of Kelly & Gruzen, architects and engineers, New York City. He was formerly director of industrial development for Walter Kidde Constructors, Inc.

Harold A. Price will represent Freyssinet Co., Inc., on the West Coast. His headquarters will be in Napa, Calif.

Honors

David B. Steinman, designer of the Mackinac Straits Bridge, has been awarded his 19th honorary degree at St.



In North Druid Hills near Atlanta, this Cleveland 95 digs Georgia red clay, often studded with quartz and chunks of granite.

nine Clevelands . . . never a failure in the field

"We have used Clevelands ever since 1946, when our company was organized," says C. V. Lanier, field superintendent for the Concrete Construction Co. of Atlanta, Ga., "and currently we are operating nine. Mechanically, we have never had a Cleveland halt in the field.

"We have encountered every sort of obstacle and have trenched through blue granite rock, sand rock, shale, stumps, on flat land and hilly, through all types of weather. Our Clevelands have been economical to operate, easy to maintain mechanically, adaptable to every terrain and simple to handle."

There's nothing like a Cleveland for trenching . . . accurate . . . fast . . . dependable . . . clean.

The CLEVELAND TRENCHER Co.

20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO

Good Everywhere

NOW... provide *COMPLETE* containment of water, wastes, brines and sludges with

SEALTIGHT Hydromat ASPHALT LINERS

Pre-fabricated "HYDROMAT" Asphalt Liners provide the ideal liner for all domestic, industrial and recreational facilities where the containment of water, wastes, sludges, brines, etc. demand a very efficient, economical and impervious lining material. "HYDROMAT" is quickly and easily installed as a monolithic liner with mechanically sealed joints ... will expand and contract with soil movements without rupturing or breaking the seal. Installed over (exposed) or under earth, concrete, gunite, steel or other materials... provides the practical answer to the problem of re-lining old, cracked concrete or gunite linings. "HYDROMAT" may be safely used for the containment of potable water in clear well construction and its ruggedness and durability permit its use as a fully exposed lining in large reservoirs to depths exceeding 50 feet. "HYDROMAT" is available in three thicknesses, ½", ¼" and 5/32", in 4' widths and lengths up to 15' . . . longer lengths available on special request.

For complete installation and technical data write today for your copy of the "HYDROMAT MANUAL".

SEALTIGHT PRODUCTS FOR BETTER CONSTRUCTION

W. R. MEADOWS, INC.

16 KIMBALL STREET
ELGIN, ILLINOIS

W. R. Meadows, Inc.
16 Kimball Street, Elgin, Illinois

Gentlemen:

☐ Send my copy of the "HYDROMAT MANUAL".

☐ Have representative call.

NAME_____ TITLE_____

FIRM_____

ADDRESS_____

CITY_____ STATE_____

. . . Men and Jobs

Lawrence University's spring commencement exercises.

George F. Dalton, formerly of Dalton, Dalton Associates and **Robert A. Little,** formerly of Robert A. Little & Associates, have formed a partnership for the practice of architecture in Cleveland. The new firm is known as Robert A. Little and George F. Dalton & Associates.

Retirement

Karl J. Wagoner, chief engineer of the Baltimore and Ohio Railroad, retired June 1 to close a 41 year career that saw his participation in many of the railroad's largest construction projects. Since 1954 he has been chief engineer of the railroad.

Education

Solomon C. Hollister, dean of engineering at Cornell University, Ithaca, N. Y., received a doctor of engineering degree from Lehigh University this month at its 90th commencement exercises.

Gordon B. Carson, former dean of the College of Engineering, at Ohio State University, has been promoted to vice president and business manager of the University. He succeeds **Jacob B. Taylor,** who resigned last fall.

Dr. Robert S. Rowe, chairman of the civil engineering department of the Duke University School of Engineering, has been named J. A. Jones Professor of Civil Engineering. He is the second person to occupy the chair since it was established in 1951 to honor the founder of J. A. Jones Construction Co. of Charlotte, N. C.

Associations

Octabe Ammon has been named managing director of the Ohio Concrete Pipe Manufacturers' Association, Columbus, Ohio, having formerly been with American Marietta Co. in Syracuse, N. Y.

H. Brian Wilson, of Lansing, Mich., has been appointed division engineer of the Corrugated Metal Pipe Association, and will represent the association in Michigan and Wisconsin.

Glenn I. Voorheis has been installed as president for the current year of the Civil Engineers and Land Surveyors Association of California. **F. W. Pafford** and **C. S. Northrop** will serve as vice president and secretary-treasure.

Dewey S. Wright, Denver City Engineer, has been elected president of the Colorado Society of Engineers.

Consulting Engineers Association of Michigan has joined the National Council of Consulting Engineers. **John R. Snell** of Lansing is new president of the state group.

Obituaries

Eugene F. Brinker, 57, manager of highway product sales for the Aluminum Company of America and an authority on aluminum applications in road and bridge building industries. He was a graduate of Georgetown University, and had been with Alcoa since 1929..

William R. Robinson, 69, president and treasurer of Ohio Galvanizing & Construction Co. He served in the Corps of Engineers during World War I, became general manager of the construction firm in 1921.

Edward A. Kilroy, 72, chairman of Kilroy Structural Steel Co., Cleveland contracting firm. A graduate of Case Institute of Technology, he founded the steel firm in 1920. He was a past president of the Cleveland Iron League and a board member of the Building Trades Employers Association.

Frederick V. Murphy, 79, founder and retired head of the department of architecture at Catholic University, Washington, D. C. Following his retirement in 1950, after having been a teacher for 38 years, Mr. Murphy became a member of the architectural firm of Murphy & Locraft and designed many of the public buildings, churches and schools in the District.

Hugh J. Boyd, 70, secretary and treasurer of Remington & Boyd, civil engineers, Pennsauken, N. J.

Guy H. Cooper, 58, former vice president of Algernon Blair Contracting Co., Montgomery, Ala.

John H. Cosby, Jr., 70, city engineer of Cambridge, Md. for 19 years. An engineering graduate of Virginia Military Institute, Mr. Cosby served as a consulting engineer in Cambridge, then as an engineer with the Delaware Highway Department. Until he became Cambridge city engineer in 1939, he was secretary to the Delaware Highway Commission.

Halbert P. Gillette, 88, founder and president of Gillette Publishing Co. of Chicago, publisher of road and construction magazines. Mr. Gillette's 56-year career in publishing followed his graduation in 1892 as a mining engineer from Columbia University and experience in civil engineering and contracting. In 1902 he joined the staff of ENGINEERING NEWS, one predecessor of ENGINEERING NEWS-RECORD. He founded his own publishing company in 1906.

Nelson A. Eckart, 79, retired manager of the San Francisco municipal water department. An engineering graduate of the University of California, he headed the water department from its inception in 1931 until 1949, when he retired.

Orin L. Kipp, 72, with the Minnesota Highway Department for 41 years. Since his retirement in 1955 from the department, he had been acting as engineering consultant to it. He was chief highway engineer and assistant highway commissioner at the time of his retirement. He attended Cornell College, at Mt. Vernon, Iowa, and Iowa State College.

Harold C. Boyd, 60, vice president of Virginia Steel Co., Inc. He was a graduate of Drexel Institute of Technology.

James G. Cooney, 64, a consulting engineer for about 40 years. Early in his career he had been associated with Consoer, Townsend & Quinlan, Chicago. Later he maintained an office in St. Louis, Mo. During the last 12 years he had served as superintendent of highways for Clinton County, in Illinois.

Edward V. Gage, president of Byers Construction Co., Ltd., Montreal. He was national vice president of the Canadian Construction Association and past president of the Montreal Builders Exchange. He was a 1915 engineering graduate of McGill University.

William L. Havens, 64, senior partner in the firm of Havens & Emerson, consulting engineers, Cleveland. He began his career in 1916 as assistant engineer with the subdivision of sewage disposal of the City of Cleveland, and remained with the department until 1922. For the next 18 years he was an associate in the firm of George B. Gascoigne & Associates, consulting engineers. In 1940 he became a partner in, and was in charge of the Cleveland office of Havens & Emerson (successor to Gascoigne and Associates). He was a 1916 civil engineering graduate of Cornell University.

James Ellison, building contractor of Hamilton, Ont. He owned and operated the Ellison & Jones Building and Contracting Co. for 36 years.

Spencer Roberts, 85, a retired architect who designed the Trenton, N. J., city hall. He also worked on restoration of several downtown Philadelphia areas.

Alpheus W. Chittenden, 89, an architect who designed many of Detroit's older homes.

Seth G. Hess, 65, director and chief engineer of the Interstate Sanitation Commission of New York, New Jersey and Connecticut, in New York City. As operative head of the commission, Mr. Hess was instrumental in getting the current cleanup of New York harbor as far along as it is. A graduate of Cornell University, he joined the commission in 1937, shortly after its formation as the first interstate regulatory agency with enforcement powers.

Mark R. Kulp, 72, Idaho state reclamation engineer, in Bliss, Idaho. Mr. Kulp taught in the engineering school at the University of Idaho before taking the state post in 1943. At the University he designed the Kirtley Engineering Laboratory, an agricultural and engineering research institute. He was a member of the Columbia Basin Interagency Committee and the Columbia Interstate Compact Commission.

Felix Kahn, 76, retired San Francisco construction executive who pioneered reinforced concrete construction in the West, in Washington, D. C. Mr. Kahn along with Alan MacDonald founded MacDonald & Kahn, Inc., a firm that participated in construction of Hoover Dam, the San Francisco-Oakland Bay Bridge, Parker Dam, Bonneville Dam, Grand Coulee Dam and the Delaware Aqueduct. In 1945, after Mr. MacDonald's death, the firm was liquidated and Mr. Kahn formed M & K Corp. with B. F. Modglin, a long-time associate. A civil engineer, Mr. Kahn was one of the first builders interested in the potential of reinforced concrete.

H. Norwood Michie, 60, civil engineer of Durham, N. C. He was a graduate of Virginia Military Institute.

Daniel W. Cole, 95, a highly regarded dambuilder, in Marietta, Ga. He was a pioneer civil engineer with the U. S. Reclamation Service (Bureau of Reclamation) for 15 years; in 1910 he was construction engineer on Shoshone Dam in Wyoming and in 1915 functioned similarly at Arrow Rock Dam in Idaho. In their day, these were the two highest dams in the world. At the age of 60 in 1923, he became associated with the Electric Bond and Share Co. (Ebasco Services, Inc.) of New York City, where he served as a construction and hydraulic engineer until his retirement in 1939.

MAYO

PNEUMATIC GROUTER

and

"PEA SHOOTER"

Simple to Operate

Highly Efficient

The Mayo Grouter quickly and easily places low-pressure grout in tunnels, mines, shafts, foundations, and subgrades. It also may be used to inject sodium silicate emulsions for stabilizing caving or running ground.

This versatile piece of equipment can readily be converted to a "Pea Shooter" for shooting Pea or "Birds Eye" gravel back of liner plates and backpacking outside lagging plates.

Write for Free Bulletin 13 for full details and specifications.

MAYO

TUNNEL AND MINE EQUIPMENT

LANCASTER, PENNA.

FOUNDATION CONSTRUCTION BY

McKINNEY

DRILLING CO.

BOX 190—LOGAN 4-8373

NACOGDOCHES, TEXAS

CAISSONS

DRILLED & UNDERREAMED

PIERS

WIRE OR PHONE FOR A QUOTATION ON YOUR NEXT FOUNDATION JOB

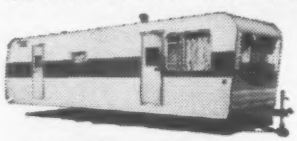
ANYWHERE IN THE WORLD

OFFICES IN

ATLANTA, GA. • PITTSBURGH, PA.

WASHINGTON, D. C. • CLEVELAND, OHIO

CONTRACTORS' TRAILERS



36 FEET COMPLETE $2495 FOB NYC

Equipped with toilet, water heater, desks, drafting table, floor heat, storms & screens throughout—many other features!

All Sizes Built to order.

High in quality—Low in Price!

NASSAU TRAILER & MOTOR SALES

2351 JERICHO TPKE.

Garden City Park, L.I., N.Y. PI 6-1401

Flood Control Dam, Connecticut

River diversion, excavation and fill prices produce contract on $4,215,000 Thomaston Dam on Naugatuck River

Although 3-way bids were taken for cement on the Thomaston Dam and appurtenant structures on the Naugatuck River in Connecticut, it was the earthwork that attracted the most dramatic bidding, where the contract was won or lost.

The award at $4,214,919 to Oneglia & Gervasini, Inc., Torrington, Conn., bidding jointly with Building Materials, Inc., was 6% below the second and 48% below the high of the thirteen bids.

Work is for the Corps. of Engineers, New England Division, Boston, Mass., Brig. General Alden K. Sibley, division engineer.

Portland cement took the contract in the 3-way bidding at $5.00 a bbl. Natural and Portland blast furnace slag cement each brought a low bid of $5.25 a bbl. High bids on these items were $6.50 per bbl for Portland and natural, and $6.00 for Portland blast furnace slag cement.

The low bidder was very low on river diversion and control, on common excavation in general, pervious and random classes, and on fill, but above the second bidder on rock excavation.

This dam is rolled earth, rock filled 2,000 ft long, 142 ft high above stream bed at center line. Maximum base width is 546 ft. It has a 450 ft concrete L type spillway with side channel. Storage capacity will be 42,000 acre feet, or 13,687,000,000 gal at elevation 494 ft, mean sea level.

Wages on the job include: carpenters, $3.45; bulldozer operators, $2.90; crane or shovel operators, $3.64; power shovel operators, $3.45; common laborers, $2.30, all including fringe benefits.

The thirteen bids on the basic contract, Lot A, together with Lots B, C and D for alternate cements, included:

Basic Contract Lot A, plus Cement Alternates

		*Lot B PC	Lot C PC+NC	Lot D PBFSC
1	Oneglia & Gervasini, Inc. & Building Materials, Inc., Torrington, Conn..	$4,212,919	$4,216,669	$4,222,419
2	Savin Bros., Inc., Hartford, Conn..	4,487,110	4,487,110	4,487,110
13	Rusciano Constr Corp & Del Balso Constr Constr Corp., Pelham Manor, NY	8,144,070	8,151,070	8,144,070
**EE Corps. of Engineers, New England Div., Boston, Mass..		4,046,200	4,047,040	4,046,200

* Contract
** Excludes profit

Bids: 4-1-58 Items	Unit	Quantity	Unit Prices 1	C 2
River, control & diversion	ls	job	$2,500	$100,000
Site preparation	ls	job	50,000	70,000
Reservoir clearing	ls	job	30,600	35,000
Exc, com, general				
1st 120,000 cy	cy	120,000	0.75	1.00
over 120,000 cy	cy	85,000	0.27	0.40
perv, borrow Area H,				
1st 155,000 cy	cy	155,000	0.42	0.60
over 155,000 cy	cy	40,000	0.35	0.35
random bor Area I,				
1st 190,000 cy	cy	190,000	0.47	0.50
over 190,000 cy	cy	50,000	0.10	0.30
random bor Area J,				
1st 40,000 cy	cy	40,000	0.45	0.50
over 40,000 cy	cy	20,000	0.10	0.30
imperv bor Area D,				
1st 250,000 cy	cy	250,000	1.10	1.10
over 250,000 cy	cy	60,000	1.10	0.70
rock, 1st 530,000 cy	cy	530,000	2.27	2.10
over 530,000 cy	cy	174,000	1.93	1.40
Line drilling	sf	9,000	3.00	3.00
Fill, impervious	cy	255,000	0.18	0.40
random	cy	290,000	0.18	0.35
select pervious	cy	155,000	0.18	0.30
rock	cy	720,000	0.38	0.30
sluiced, trestle area	cy	28,000	1.25	0.50
Roll for compaction, add	hr	500	16.00	8.00
Reinf conc pipe, 12'	lf	50	4.00	3.00
18'	lf	130	5.00	4.00
30'	lf	110	7.50	10.00
Gravel	cy	8,500	0.90	1.50
Rock bolting	ea	2,700	16.00	16.00
Backfill, compacted	cy	15,000	1.25	0.70
Conc outlet works,				
below elev 432'	cy	3,700	25.00	40.00
above elev 432'	cy	550	58.00	50.00
conduit & transition	cy	1,700	30.00	40.00
spillway, lining				
1st 3,300 cy	cy	3,300	28.75	30.00
over 3,300 cy	cy	1,900	20.50	20.00
weir & walls	cy	9,300	25.00	25.00
bridge & abutments	cy	1,350	27.25	30.00
superstructure	cy	140	53.00	60.00
miscellaneous	cy	100	58.00	100.00
Steel reinf	lb	570,000	0.13	0.17
Waterstops, rubber	lf	800	3.50	2.00
Anchor bars, 6' setting	ea	400	14.00	25.00
10' setting	ea	1,300	27.00	40.00
12' setting	ea	230	25.00	45.00
Fndn drill & grout, mobilize & demobilize	ls	job	1,500	3,000
Cement asbestos pipe	lf	950	0.50	2.00
Drain holes, drill	lf	5,600	1.60	5.00
Grout holes, drill	lf	6,000	1.00	3.00
NX explor fndn holes, drill	lf	1,400	5.50	4.00
Grout, Portland cement, place	cf	1,500	1.60	4.00
connection to	ea	260	5.00	5.00
Hydr gates & access, & gates hydr syst	ls	job	112,800	150,000
Float well & accessories	ls	job	2,700	3,000
Gate vent system	ls	job	5,100	8,000
Diesel-elec generator set	ls	job	10,100	14,000
Intake tower, misc work	ls	job	16,500	12,000
Trolly hoist, 10 ton	ls	job	17,250	20,000
Tile gages	ls	job	2,500	2,500
Alum stairs & platf	lb	9,200	3.75	3.50
Struct stl access bridge	ls	job	20,600	30,000
service bridge	ls	job	19,700	31,000
Metals, miscellaneous	lb	32,000	0.40	0.35
Struct stl, miscellaneous	lb	13,000	0.40	0.30
Electric light & power	ls	job	33,250	50,000
Log boom	ls	job	6,000	6,000
Flagpole	ls	job	1,100	600.00
Guard rail, cable	lf	3,600	2.75	2.50
posts	ea	20	14.50	12.00
Fence, chain link	lf	1,600	3.00	4.00
Utility building	ls	job	30,600	45,000
Comfort station	ls	job	5,265	5,000
Bit conc road surface	sy	7,200	2.50	2.00
Well, mobil & demobil for	ls	job	150.00	500.00
Casing, drive 8" outer	lf	10	8.70	15.00
drill 8" hole below	lf	10	6.50	15.00
set 6" liner	lf	20	7.70	9.00
Drilling hole, 6", uncase	lf	280	5.50	15.00
Pumping well, test	hr	60	12.00	10.00
Water distribution system		job	9,300	10,000
Sewage disposal system	ls	job	2,850	5,500
Topsoil	sy	8,000	0.25	0.30
Seeding	sy	8,000	0.20	0.10
Safety mesh	sy	72,000	1.65	1.00
Alternate Cement Bids:				
Lot B, Portland cement	bbl	30,000	5.00	5.50
C, Portland cement	bbl	23,000	5.00	5.50
natural cement	bbl	7,000	5.25	5.50
Lot D, Portland blast furnace slag cement	bbl	30,000	5.25	5.50

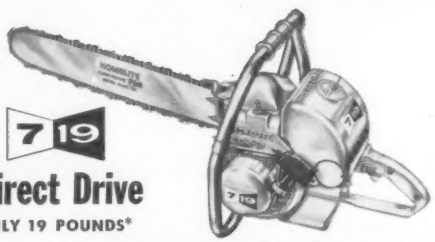
Completion schedule: 960 days

Put yourself in this money-saving picture...

with Homelite's two new, job-tested Magic 7 chain saws . . . the 7-19 and 7-21. They both have the Homelite Magic 7 features that let you save money on clearing. 1. new cylinder design in high compression, short-stroke engine provides 12% more cooling area, cuts engine friction. 2. tough, drop-forged, counter balanced crankshaft gives smooth performance. 3. revolutionary intake valve increases engine power. 4. finger-tip control plunger pumps oil directly to chain and guide bar. 5. automatic governor cuts engine wear. 6. automatic clutch stops chain when throttle is released. 7. large air filter keeps out sawdust, dirt, snow . . . *and both saws are guaranteed for 7 months.*

New Homelite MAGIC 7 Chain Saws

7 Month Guarantee

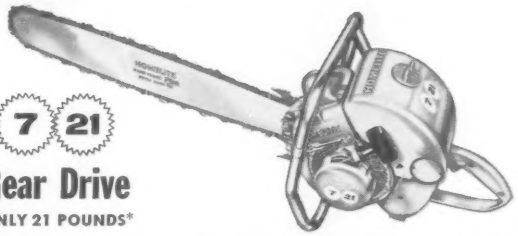


7 19

Direct Drive

ONLY 19 POUNDS*

No other chain saw does so many wood clearing jobs. Cuts 18″ softwood in 12 seconds, 8″ hardwood in 4 seconds. Fells trees up to 5 feet in diameter. One man can clear a construction or building sight in the fastest money-saving time. The Homelite 7-19 is so easy to handle even an amateur can operate it with little effort. Straight blade, plunge-cut bow and brush cutter.



7 21

Gear Drive

ONLY 21 POUNDS*

A real professional's saw. Plenty of power for the big trees. Cuts 20″ trees in 18 seconds. Brings down trees up to 7 feet in diameter. The Homelite 7-21 stands up under the grind day in and day out. Available with straight blades and full line of attachments — plunge cut bow, clearing bar, brush cutter.

*less bar and chain

Try both Magic 7 Chain Saws in a Free Demonstration. Homelite branch offices and chain saw dealers are located throughout the country. Your nearest one is as close as your phone. Call him and let him give an actual demonstration of Magic 7 power.

HOMELITE

A DIVISION OF TEXTRON INC.

1107 Riverdale Avenue, Port Chester, New York

Canadian Distributors: Terry Machinery Co., Ltd.

Find Your Homelite Dealer In The 'Yellow Pages'

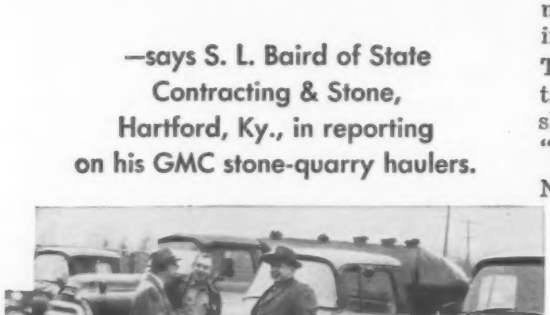
"We're buying GMC's because they stay on the job!"

—says S. L. Baird of State Contracting & Stone, Hartford, Ky., in reporting on his GMC stone-quarry haulers.

"Our GMC's take less time-out for repairs and maintenance than any other trucks we've used," Baird says. That's the dollars-and-cents reason he gives for adding new GMC's year after year—ever since their first eleven in '52.

This GMC brand of dependability is especially important to State Contracting & Stone. "We have a relatively short road-building season in Kentucky," Baird explains. "So our trucks have to go all-out all season long."

Naturally, they have to keep costs in line, too. And according to their books, GMC's again come out in front with maintenance costs about half that of their other-make trucks doing the same job.



Roy Schlinkert, GMC District Manager, discusses the purchase of new GMC trucks with State Contracting's Secretary, S. L. Baird, and President Robert Hudson (l. to r.).

Remember, too—the newest GMC's are engineered to outperform even these fine records. Engines are more powerful and time- and moneysaving Allison TORQMATIC Transmissions* are now available.

They're typical of the never-ending improvements you get in GMC trucks—made by the world's largest manufacturer of commercial vehicles exclusively.

*Optional at extra cost

GMC TRUCK & COACH—*A General Motors Division*

Tough pulls like this are no problem to State Contracting's GMC's—even though they already have more than 4 years of rugged stone hauling to their credit. After 300,000 miles of grueling service, they still outperform other trucks on this job.

GMC—America's Ablest Trucks

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES

- Cement, Aggregate Ready-mixed Concrete, Asphalt: Last, June 5; Next, July 10
- Iron and Steel Products, Pipe: Last, June 12; Next, July 17
- Wood Products, Glass, Explosives, Chemicals: Last, June 19; Next, July 24
- Clay Products, Lime, Plaster, Paint, Roofing: Last, June 26; Next, July 31

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ½"	¾"	GYPSUM BOARD LATH plain or perf per Msq ft ⅜" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½" sq ed	½" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½"	MINERAL WOOL INSULATION loose, per 40-lb bag a	3" batts per M sf	GLASS FIBER INSULATION loose, per 40-lb bag a	3" batts per M sf	ALUMINUM FOIL 60¢ Kraft 1 side foil per roll of 250 s. f.	Expansible Blanket 2 layers foil per Msq. ft
Atlanta	$70.00	$80.00	$43.50	$70.00	$70.00	$127.00	$70.00	$1.30r	$80.00	$2.00b	$75.00	.....	.....
Baltimore	51.70f	45.55f	34.25f	55.35f	65.00f	108.50f	69.00f	1.30	66.50	1.50	45.00	$4.00g	$33.50
Birmingham	68.90	57.00	47.77	75.00	65.00	136.50	81.00	1.40	70.00	1.60	78.00	3.30g	.....
Boston	60.00m	50.00m	36.00m	60.00m	65.00m	120.00m	70.00kn	1.45	75.00	.....	45.00	5.30	53.50
Chicago	67.00	54.00	45.00	62.00	87.00	123.00	87.00	1.95	80.00	.....	63/65z	5.25g	.....
Cincinnati	48.00w	42.85w	32.05w	51.16w	70.00w	125.00w	72.50w	1.30	63.00	1.30	76.80	3.13f	50.00
Cleveland	62.00	56.50	41.50	65.00	75.00	125.00	80.00	1.35/1.50	75.00	.....	53.00e	17.50o	55.00
Dallas	55.00	52.50	42.50	60.00	68.50	117.50	68.50	2.00	62.25	1.45	66.15	4.25g	.....
Denver	63.00	54.50	41.00	62.00	75.90	128.00	74.90	.....	71.00u	1.30u	60.00u	11.00r	21.00
Detroit	64.00	54.00	37.00	66.00	60.50	100.50	60.50	.....	.....	1.95b	88.00	.....	.....
Kansas City	65.00	55.00	40.00	.....	72.00	115.00	75.00	1.40	75.00	2.00	75.00	3.00d	.....fy
Los Angeles	66.00	60.50	0.33z	63.00	75.00	125.00	80.00	.....	69.00	1.35s	64.00	4.40g	.....
Minneapolis	75.00	65.00	0.41z	80.00	78.00	140.00	78.00	2.00	80.00	1.80	80.00	5.50	.....
Montreal	56.00	47.40	36/39	53.00	63.25	.....	63.00	1.50	66.00	1.50	66.00	9.00g	56.00
New Orleans	60.00	50.00	45.00	60.00	75.00	140.00	72.80	1.75	85.00e	.....	.....	.....	.....
New York	55.25	47.25	36.25	54.25	75.00	120.00	75.00	1.55b	68.50	1.55b	68.50	4.25i	52.50c
Philadelphia	50/55	48/53	34/40	49/54	68/73	105/110	55/65	.....	60/70	.....	70/75	5.60/6.34	40/50
Pittsburgh	70.00	65.00	40.00	.....	63.50	102.50	57.50	1.05s	55.00s	1.05s	55.00s	3.80i	38.50
St. Louis	67.00	56.50	40 00	70.00	76.50	121.50	80.00	1.35	85.00	1.65	70.00	4.50i	.....
San Francisco	57.00	48.00	0.35z	58.00	68.00	109.00	67.00	1.80	66.50	1.60	66.50	4.95	55.00
Seattle	68.30	51.65	51.05	65.00	74.80	125.00	73.50	1.60t	74.00	1.90*p	75.00*t	4.25	48.50
Toronto	55.00	47.00	38.00	64.50	75.00	.....	.....	1.50	62.50	.....	62.50	16.80o	46.00

**e F.o.b. warehouse. **a Semi thick. **b 30¢ bag. **c 12" to 24" width. **d 40¢ kraft paper, 5 Msf, 100/500 rolls. **e 20¢ sq ft bag, 4" thick. **f Full trailer loads. **g 80¢ kraft paper backing. **h LCL. **i 80¢. **j 80¢. **l 2". **m 10 ton quantities. **n Distributor's sliding. **o Per Msf roll. **p 32¢ bag. **q 500 sf. **r Per cwt **s 35¢ bag. **t 28¢ bag. **u Flame proof $75. **w F.o.b. city. **x Sq yd. **y Temporarily off market **z Spun rock wool, 3½ cu ft bags

HOURLY WAGE RATES—Base rate + fringe benefits

	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Common Labor Building	Common Labor Heavy Cons
Atlanta	$3.60	$2.95	$3.15+7½¢d	$3.225	$3.125	$3.30+21½¢s	$3.30+25¢d	$1.60	$1.60
Baltimore	3.80+10¢d	3.20+7½¢d	3.75+7½¢d	3.80/3.95+10¢g	3.45+7½¢d	3.425+7½¢iii	3.30+7½¢d	2.05+7½¢d	2.05+7½¢d
Birmingham	3.75	2 85	3.25+10¢c	2.65e	3.05	3.425	3.32+10¢c	1.65	1.75
Boston	3.75+15¢d	3.40+10¢d	3.70+20¢g	3.77½+10¢j	3.65+20¢	3.55+12¢s	3.20+10¢d	2.55+7¢d	2.50+7¢d
Chicago	3.82½+7½¢c	3.65+20¢c	4.00+16¢c	3.55+5¢c	3.70+23¢c	3.90+12¢c	3.75+22¢ooo	2.77½+7½¢c	2.77½+7½¢c
Cincinnati	3.85	3.57½	3.50+7½¢d	3.225/3.475	3.62½	3.82+4¢N	3.80+9½¢c	2.62½	2.40
Cleveland	3.805+10¢c	3.83	3.73+10¢c	3.83	3.83	3.855	3.73+10¢d	3.10	3.005
Dallas	3.775	3.10	3.225+7½¢c	3.20/3.25	3.56¼+10¢c	3.25+7½¢c	3.25+8½¢c	1.62½	1.62½
Denver	3.75	3.25	3.175+7½¢d	3.05	3.375+12½¢h	3.40f	3.55+10¢D	2.17	2.17
Detroit	3.77+38¢ff	3.40+40¢e	3.60+22½¢P	3.47+25¢h	3.66+34¢ef	3.65+34½¢C	3.73+14¢D	2.58+25¢e	2.58+25¢e
Kansas City	3.85	3.325	3.40	3.345	3.625	3.47+16D	3.40+9¢W	2.355	2.405
Los Angeles	3.85+10¢hh	3.375+20¢d	3.625+10½¢c	3.41+10¢d	3.94+15¢d	3.90f	3.70+28½¢	2.68+10¢c	2.68+10¢c
Minneapolis	3.725	3.30	3.47	3.30	3.40+23¢D	3.38+36¢m	3.215+20¢c	2.55	2.55
New Orleans	3.425+5¢	2.95	3.25+7½¢c	3.025+7½¢c	2.985+5¢c	3.375+7½¢c	3.25+15¢c	1.70	1.65
New York	4.25+37¢hv	4.00+32¢hJ	4.30+36¢p	4.25+34¢ee	4.15+52¢k	3.90+43½¢ef	4.20+42¢kL	2.90+23.2¢V	2.90+23.2¢V
Philadelphia	4.00+17¢i	3.635	4.05+18¢M	4.05+18¢M	3.90+15¢i	4.07½+16¢m	4.00+11½¢c	2.35	2.65
Pittsburgh	4.15+20¢m	3.675+10¢i	3.80+10¢d	3.64+10¢d	3.575+17½¢m	4.35+28¢d	4.00+20¢m	2.45+20¢m	2.30+20¢ff
St. Louis	3.90+31½c	3.575+10¢i	3.60+7½¢i	3.675i	3.80+7½i	3.83+29½¢	3.85+27½¢i	2.625+10¢i	2.625+10¢i
San Francisco	3.95+52½¢dd	3.30+30¢f	3.62½+10¢i	3.405+10¢i	3.69+30¢R	3.785+26¢U	3.70+46¢K	2.685+10¢i	2.685+10¢i
Seattle	3.90+10¢d	3.13+10¢d	3.40+10¢d	3.29+20¢e	3.40+10¢d	3.65+26¢X	3.62+23¢T	2.70+10¢d	2.70+10¢d
Montreal	2.20+5¢jj	2.10+5¢jj	2.25+5¢jj	2.00+5¢jj	2.35+5¢jj	2.20+5¢jj	2.32+5¢jj	1.50+3¢jj	1.50+3¢jj
Toronto	2.76+11¢ll	2.50+10¢l	2.55+7¢l	2.60+10¢l	2.60+10¢l	2.80+11¢l	2.69+17¢ll	1.55+6¢l	1.55+6¢l

ENR Skilled Average (Bricklayers, Carpenters, Iron workers): $3.638. ENR Common Average $2.389.

* Cost of living bonus incl. in base pay. **a 6 hr day. **b 7 hr. day. **c 5% vac. stamp fund plus 10¢ WF for bricklayers; 4% VF for electricians plus 8¢ WF, 1% PF. **d H & WF. **e 10¢ H & W, 10¢ VF. **f 10¢ H & W, 10¢ PF, 10¢ VF. **h $2.85 homes & housing plus 7½¢ WF. **i WF. **j Inc. 4% VF; 1% PF od by employer. **k 10¢ WF, 5¢ VP, 5¢ HP. **l 4% VF. **m 7½¢ WF, 10¢ PF. **n 7% V & Hol. 3% H & W, 1% PF. **o 10¢ WF, 10¢ PF. **p 3% WF, 3% PF +10¢ in lieu of pd. hol. **q 10¢ WF, 8% V & H, 3% PF. **r 4% WF, 20¢ PF. **s 8% W & PF, 4% VF, 1% NG, 1% JI, plus 6 PH. **t Inc. 10¢ WF. **u 10¢ WF, 1% PF, ½% apprent. **v 1 drum; 2 drums, 2.80. **w 15¢ WF, 15¢ VF. **x 2% VF. **y 10¢ H & W, 10¢ PF. **z 10¢ WF, 5¢ HP. **A 15¢ WF, 15¢ PF, 20¢ BF. **B 7½¢ VP, 5¢ PF 1½¢ Ed. F. **C 9¢ H & W & Ins., 7% V & H. **D 10¢ H & WF, 5¢ indus. prom. **E 6% WF, plus travel pay per day. **F Plus $4 per day annuity contrib. **G 10¢ WF, 10¢ VF, 3¢ prom. **H 10¢ WF, 10¢ VP, 3% PF, 2% PH. **I 15¢ H & WF, 5¢ advtg. **J 5% WF, 6 PH, 3% PF. **K 25¢ W & PF, 15¢ VF, plus 6¢ misc. **L 3% WF, 3% PF, 3% VF, 1% Ed. F. **M 10½¢ WF, 7½¢ PF. **N 10% PF. **O 10¢ WF, 1% NECA, 3¢ AF. **P 10¢ H Ins., 7½¢ PF, 5¢ VF. **Q 2 drums; 1 drum $2.85/3.00 + 10¢ WF **R 10¢ H & WF, 2¢ admin. 1¢ apprent. **S 10¢ H & WF, 15¢ PF. **T H & W, VF. **U 10¢ WF, 13¢ VF, 3¢ PF. **V 4% WF, 4% PF. **W 7½¢ WF, 1½¢ Ed. F. **X 7½¢ WF, 14¢ VF. **aa 7¢ WF, 15¢ PF. **bb 8¢ WF, 2¢ adv. **dd 17½¢ WF, 20¢ PF, 10¢ PH, 5¢ Jt Bd. **ff 10¢ H & W, 5¢ PF. **gg 10¢ ins. **hh 7½¢ H & WF, 5¢ indus. prom **ii 4% WF, 4% PF, 6 PH. **jj 2%VF

	Trucks 1½ T	Trucks under 4 cy	Trucks over 4 cy	Tractor Operators Incl. bulldozers 34-49 hp	70-100 hp	100 & over	Tractor scraper 15-16 cy	Power cranes & shovels ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$1.70	$1.80	$2.05	$2.70	$2.70	$2.70	$2.70	$3.225	$3.225	$2.70	$2.475	$1.77
Baltimore	2.00+7½¢e	2.00+7½¢e	2.10+7½¢hh	3.40/3.55 +10¢ab	3.40/3.55 +10¢ab	3.40/3.55 +10¢ab	3.40/3.55 +10¢ab	3.80/3.95 +10¢ab	3.80/3.95 +10¢ab	3.40/3.55 +10¢ab	2.85/3.00 +10¢ab	2.10+7½¢e
Birmingham	1.73	1.92rr	2.25oo	2.79	2.79	2.79	2.93	2.93	2.93	2.80	2.53	1.90
Boston	2.395c	.....e	.....e	3.40+10¢ad	3.40+10¢ad	3.40+10¢ad	3.40+10¢ad	3.775+10¢e	3.775+10¢e	3.40+10¢e	3.325+10¢e	2.60+7¢ee
Chicago	2.36+15¢fo			3.30+5¢e	3.45+5¢e	3.20+5¢e	3.00+5¢e	3.90+5¢e	3.90+5¢e	3.25+5¢e	3.10+5¢e	.....
Cincinnati	2.45+2½¢eee	2.55+2½¢ee	2.65+2½¢ee	3.225	3.225	3.225	3.225	3.475	3.475	3.475	3.475	3.475
Cleveland	2.75+10¢e	2.75+10¢e	2.75+10¢e	3.58	3.58	3.58	3.58	3.83	3.83	3.58	3.455	3.455
Dallas	1.625	1.625	1.625/2.625f	1.625/2.625f	1.625/2.625f	1.625/2.625f	1.625/2.625f	1.625/2.625f	1.625/2.625f	1.625/2.625f	1.625/2.625Rf	1.775/2.00f
Denver	2.30	2.40	2.55	2.30	2.90	2.90	2.90	3.05	3.05	2.90	2.90	2.45
Detroit	2.61	2.61	2.61	3.50+10¢e	3.50+10¢e	3.50+10¢e	3.50+10¢e	3.50+10¢e	3.50+10¢e	3.50+10¢e	3.225+10¢e	2.71+25¢eee
Kansas City	2.33e	2.33e	2.405e	2.65	3.10e	3.10e	3.10e	3.345	3.345	3.10	3.345f	2.45
Los Angeles	2.83+10¢e	2.83+10¢e	3.03+10¢e	3.71+10¢e	3.71+10¢e	3.71+10¢e	3.81+10¢e	3.81+10¢e	3.81+10¢e	3.81+10¢e	2.93+10¢e	2.89+10¢e
Minneapolis	2.55	2.55e	2.70e	2.93	3.15e	.....	3.15	3.37e	3.63e	2.93	2.82	2.70
New Orleans	1.80	2.05	2.05	2.375+7½¢e	3.025+7½¢e	3.025+7½¢e	3.025+7½¢e	3.025+7½¢e	3.025+7½¢e	3.025+7½¢e	2.375+7½¢e	1.75
New York	2.21+22½¢c	2.75+14¢hh	2.75+14¢hh	3.625+29¢h	3.625+29¢h	3.625+29¢h	3.75+30¢h	4.50+36¢h	4.50+36¢h	3.75+30¢h	3.75+30¢hf	3.35+27¢ee
Philadelphia	—2.315/2.45+12½¢ee—			—3.34/4.09½+10¢e—			3.34/4.09½ +10¢e	—3.34/4.09½+10¢e—		3.34/4.09½ +10¢e	3.34/4.095+10¢e	2.35+15¢e
Pittsburgh	2.37+20¢m	2.51+20¢m	2.61+20¢m	3.44+10¢e	3.44+10¢e	3.44+10¢e	3.44+10¢e	3.64+10¢e	3.64+10¢e	3.64+10¢e	3.15+10¢e	2.30+20¢m
St. Louis	2.65+7½¢ee	2.70+7½¢e	2.70+7½¢e	3.675kk	3.675kk	3.6-5kk	3.675kk	3.675kk	3.675kk	3.675kk	3.125kk	3.125kk
San Francisco	2.75+10¢e	2.75+10¢e	2.89+10¢e	3.52+10¢e	3.52+10¢e	3.52+10¢e	3.52+10¢e	3.85+10¢e	3.85+10¢e	3.68+10¢e	3.13+10¢e	2.955+10¢e
Seattle	2.87+17½¢ddz	2.87+17½¢ddz	3.07+17½¢eee	3.26+20¢ee	3.26+20¢ee	3.26+20¢ee	3.26+20¢ee	3.63+20¢ee	3.63+20¢ee	3.35+20¢ee	2.99+20¢ee	2.90+10¢e
Montreal	1.50+3¢ll	1.50+3¢ll	1.50+3¢ll	1.70+4¢ll	1.93+4¢ll	1.93+4¢ll	1.93+4¢ll	2.19+5¢ll	2.19+5¢ll	1.93+4¢ll	1.80+4¢ll	1.80+4¢ll
Toronto	1.75+9¢ll	1.75+9¢ll	1.75+9¢ll	2.00+8¢ll	2.10+8¢ll	2.10+8¢ll	2.10+8¢ll	2.60+10¢ll	2.60+10¢ll	2.10+8¢ll	2.15+9¢ll	2.15+9¢ll

**a H & WF. **b lower rates, straight time; other broken. **c 2-axle; 10 wh. 3 axle $2.45; Euclid $2.65. **d intermediate. **e bldg contr.; highway $2.45+7¢ WF. **f less than 2-T. **g up 6 cy. **h 4% WF, 4% PF. **i 6-8 cy. **j plus $2 pd by employer for hosp. death benefits to family. **k bldg constr; steel contr $3.475. **l higher rates are union, other taken from min. wage approved by County Comm. Court. **m 10¢ H & W, 5¢ PF. **n flatbed. **o under 10 cy. **p over 10 cy. **q over 50 hp. **r blade grader. **s WF. **t single. **u incl. 10¢ H & W. **w 7½¢ H & W. 5¢ PF. **x 7½¢ WF, 10¢ PF. **y to 3½ cy. **z 3½ cy & over. **aa plus W & PF **bb 3% WF, 2% PF; plus 11 PH. **cc 11¢ WF, 11½¢ PF, 11 PH. **dd up to 5 cy. **ee 5 cy & over. **ff 1½ to 3 T. **gg up to 5 T; 5 T & over, 2.25. **hh 5¢ H & WF ,2½¢ PF. **ii 4% VF **kk Incl. 10¢ WF. **ll Incl. 2% VF. **mm 10¢ H & WF, 10¢ ins, 5¢ VP. **oo Plus $2.25 wk. WF. **ss 5% WF, plus 6 PH. **tt 10¢ H & WF, 10¢ PF. **R revised

MEXICO CITY PRICES

Pesos, F.o.b. City		May '58	Jun. '58
Common Wages—Building (8 hr. day) (Peons)	av. per hr.	1.57	1.57
Common Wages—Heavy Const. (8 hr. day) (Peons)	av. per hr.	2.00	2.00
Skilled Labor Wages			
Carpenters (8 hr. day) 1 cl.	av. per hr.	3.25	3.25
Bricklayers (8 hr. day) 1 cl.	av. per hr.	2.87	2.87
Struct. Iron Workers (8 hr. day) Remachadores.	av. per hr.	4.38	4.38

Struct. Steel, Shapes		May '58	Jun. '58
3"-15" x 12 meters ... per metric ton f.o.b Monterrey		2400.00#R	2400.00#R
Reinf. Steel, Corrugated Rods			
⅜" x 11 meters	per ton	2100.00	1800.00
½" x 11 meters	per ton	2100.00	1800.00
⅝" x 11 meters	per ton	2000.00	1750.00
¾" x 11 meters	per ton	2000.00	1750.00
⅞" x 11 meters	per ton	2000.00	1750.00
1" x 11 meters	per ton	2000.00	1750.00

Gravel truck load at 3½ cu. meters		May '58	Jun. '58
Blue Gravel	per tr. load	75.00	84.00
Rose Gravel	per tr. load	65.00	65.00
Cement, Std. Port. (Tolteca).	per ton	240.00	230.00
Lumber			
1" Pine	per M ft.	1700.00	1700.00
1½" Pine	per M ft.	1900.00	1900.00

R: revised

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Plymouth**—HOSPITAL—BA 7/11—Jordan Hospital, Sandwich St., Plymouth, hospital, Sandwich St. $1,000,000. Plans deposit $100. James H. Ritchie & Assoc., 135 Clarendon St., Boston, Mass., archt.-engrs. CD 8/13.

▲ **Mass., Worcester**—SCIENCE BLDG.—BA 7/11—Holy Cross College, College St., Worcester (selected list of bidders) science bldg. $1,250,000. C. W. Buckley, Inc., 311 Main St., Worcester, Mass., archt. CD 4/4.

▲ **Mass., Waltham** — ADMINISTRATION BLDG. — BA 7/16—Brandeis University, 415 South St., Waltham, administration bldg. $1,150,000. Plans deposit $100. Hugh A. Stubbins Assoc., 806 Mass. Ave., Cambridge, Mass., archts. CD 6/6.

▲ **Conn., Easton**—SCHOOL—BA 7/17—Regional Bd. of Educ., District No. 9, Redding Elementary School, Redding, regional junior-senior high school, Black Rock Turnpike, for towns of Easton and Redding. $1,500,000. Plans deposit $100. Lyons & Mather, 211 State St., Bridgeport, archts. CD 11/20/57.

Mass., **Roxbury**—LABORATORY—BA 7/17—Boston Lying-in Hospital, 221 Longwood Ave., Roxbury, research laboratory, kitchen, cafeteria, Longwood Ave. $500,000. Plans deposit $50. Johnson & Whitcomb, 22 Palmer St., Cambridge, Mass., archts. CD 2/13.

HEAVY CONSTRUCTION—LB & CA

▲† **Perini Corp.**, 73 Mt. Wayte Ave., Framingham, Mass., LB **$2,189,253** Est. $2,447,092, OPERATIONAL FACILITIES, Apron and Taxiways, Hydrants, Jet Fueling Facilities and Wash Rack at Otis Air Force Base. ENG-19-016-58-173, FALMOUTH, MASS. U.S. Eng., 150 Causeway St., Boston, Mass. Bids June 19. CD 6/3.

▲ **CONNECTICUT**—State Hy. Dpt., 165 Capitol Ave., Hartford,
O and E Contg. Co., 151-59 Powells Cove Blvd., Whitestone, N. Y. CA **$4,144,167**, Proj. 82-106 15,720 lin. ft. c. conc. on relocation of Rte. 9 incl. 5 grade separations, Tyron St. to Canel Rd. Middletown. Bids May 19. CD 5/22, under LB.

BUILDINGS—LB & CA

▲ **George A. Fuller Co.**, 11 Beacon St., Boston, Mass., CA Est. **$2,500,000-$3,000,000**, OFFICE at 127 Federal St., BOSTON, MASS. Blue Cross and Blue Shield, 38 Chauncy St., Boston, Mass. Bids May 27, CD 5/26.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

† **Pa., York**—ORGANIZATIONAL MAINTENANCE SHOP—BA 7/18—Property & Fiscal Officer for Pa., RD 2, Annville, organizational maintenance shop for Tk. Co. 104th Armed Cavalry. Plans deposit $5.

† **Pa., Johnstown** — SECURITY FENCE — BA 7/21 — Property & Fiscal Officer for Pa., RD 2, Annville, constr. security fence around vehicle storage area for standby storage compound. Plans deposit $5.

▲ **New York and New Jersey**—BA 7/22—Port of New York Authority, 111 Eighth Ave., New York, Zone 11, constr. of approach roadway sys., Section 1, in New York for lower level expansion of George Washington Bridge. Contr. GWB-190.003. Plans deposit $50. CD 8/15.

▲ **N. Y., Brooklyn**—BA 7/22—Dpt. P. Wks., Rm. 1800L, Municipal Bldg., Zone 7, Contr. No. 2A: Kent Ave. Intercepting Sewer, Ash St., Commercial St., West St. and Greenpoint Ave.; Contr. No. 2B: Kent Ave. Intercepting Sewer, Greenpoint Ave. and Franklin St. for Newtown Creek Pollution Control Proj., Brooklyn Boro. Plans deposit $80. CD 11/18/44.

N. Y., **Queens Village**—ATHLETIC FIELD—BA 7/23—Bd. Educ., Bureau of Constr., 42-15 Crescent St., Long Island City 1, general constr., plumbing and drainage, heating and ventilating, electrical work and lighting fixtures athletic field, Martin Van Buren High School, Hillside Ave. and 229th St., Queens Boro. $400,000. Plans deposit $8 general, $5 each for trades.

▲ **N. J., Rahway**—BA 8/14—Rahway Valley Sewerage Auth., E. Hazelwood Ave., Westfield, constr. of 66 in. outfall sewer line from Rahway River to Kill Van Kull, $2,250,000, CD 3/12.

▲ **New York**—BA 9/9—Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, Tuscarora Power Plant involving 2,715,000 cu. yd. excav., unclassified, 28,500 lin. ft. drill holes for exploration and grouting, 583,000 cu. yd. concrete, 35,000,000 lbs. reinforcing steel, 1,283,000 misc. metalwork, 1,049,000 lbs. erection structural steel, 6,880,000 lbs. erection gates, gate and stop log guides, Lewiston, Niagara Co. Spec. No. PA-N 23007, Niagara Contr. No. N 10. Plans deposit $50. Uhl, Hall & Rich, 230 Congress St., Boston 10, Mass., engrs. CD 8/15.

BUILDINGS—BA

▲ **N. Y., Brooklyn**—SCHOOL—BA 7/22—Bd. Educ., Bureau of Constr., 42-15 Crescent St., Long Island City 1, general constr., plumbing and drainage, heating and ventilating, electrical work and lighting fixtures Public School 298, Glenmore Ave. and Watkins St., Brooklyn Boro. $2,192,000. Plans deposit $25 general, $8 each for trades. CD 3/25/57.

N. Y., **Jamaica**—HOUSING—BA 7/8—New York City Housing Auth., 299 Broadway, New York Zone 7, general constr., heating and ventilating, electric work and plumbing for (A) Baisley Gardens Houses (Proj. No. NYC-32) Foch Blvd., 157th St., 116th Ave. to 195th St. and New York Blvd.; (B) Baisley Park Houses (Proj. No. NY 5-38) in area by Long Island Railroad, Foch Blvd., New York Blvd. to Foch Blvd. in area by 116th Ave. Bedell St., New York Blvd., Foch Blvd. to New York Blvd. and 159th St.; (C) Baisley Gardens Houses (Proj. No. NYC-32) and Baisley Park Houses (Proj. No. NY-5-38) in areas above described, Queens Boro. Extended date. Plans deposit $75. CD 6/6.

▲ **N. J., Linwood**—OFFICE—BA 7/7—Prudential Insurance Co. of America, 763 Broad St., Newark, constr. of office, $3,000,000, Frank Grad & Son, 11 Commerce St., Newark, archts., CD 10/3.

▲ **Pa., Bristol**—SCHOOL, etc.—BA 7/1—Bristol Twp. School Dist., Bristol, senior high school athletic fields, swimming pool, tennis courts and storm sewers. $3,000,000. Extended date. Wigmore & Gilfillan, 117 S. 17th St., Phila., archts.-engrs. CD 6/19.

▲ **Del., Marshallton** — SCHOOL ADDN. — BA 7/9 — School District, Marshallton, Brandywine Springs. Junior High School addn., **$1,000,000**. Plans deposit $50. Whiteside, Moeckel & Carbonell, 909 Tatnall St., Wilmington, archts. Lewis H. Doane, Penna R.R. Bldg., Wilmington, engrs. CD 9/23/57.

▲ **Philsan Co.**, 152 W. 42nd St., New York, N. Y., LB **$1,122,000** Est. $1,500,000 intake tunnel for Sturgeon Point Water Treatment Plant, Town of Evans, BUFFALO, N. Y. Erie County Water Auth., Ellicott Square Bldg., Buffalo, N. Y. Bids June 19. CD 5/29.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**West of Mississippi**
South	**Far West**
PROPOSED WORK	
Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	**Federal Government**
▲	**Project of $1,000,000 or over.**
ENR	**Engineering News-Record**
CD	**Construction Daily**

For additional reports see Construction Daily.

▲ **Bethlehem Steel Co.**, 25 Broadway, New York 4, N. Y., CA **$13,610,298**, furnishing and erecting 13,675 tons structural steel for second deck of George Washington Bridge, Proj. No. 6 WB-190.040, NEW YORK and NEW JERSEY. Port of New York Authority, 111 Eighth Ave., New York, Zone 11, N. Y. Bids June 7. CD 6/19, under LB.

▲ **NEW YORK**—Dpt. P. Wks., The Gov. Alfred E. Smith State Office Bldg., Albany,
N. Y.—**Johnson, Drake & Piper, Inc.**, 86 Trinity Pl., New York 6, N. Y., CA **$6,565,662**, est. $7,315,000, constr. 1.91 mi. four-lane divided section Scajaquada Creek Expressway and 1.95 mi. access roads between Niagara St. and Delaware Ave. in Buffalo, incl. 3 bridges, two hy. grade separation structures, 1 railroad grade separation structure and five culverts, traffic interchange facilities to be provided at Grant St. and Elmwood Ave., Erie Co.
N. Y.—**Putnam-Hawley Constr. Co.**, Potsdam, N. Y., CA **$1,326,957**, est. $1,400,000, reconstr. and relocation 6.63 mi. section Rte. 11 beginning northeast of Phila. and extending northeastward to point about 1½ mi. north of Antwerp new road, large sections of which will be on new location, Jefferson Co.
N. Y.—**Stanley DiStefano & Sons**, 594 Broadway, Watervliet, N. Y., CA **$1,251,114**, est. $1,438,000, reconstr. 8.21 mi. section Rte. 28 starting Rte. 7 intersection in Colliersville and extending northward to Rte. 166 intersection in Milford, Otsego Co.
N. Y.—**Torrington Constr. Co., Inc.**, Torrington, Conn., CA **$827,834**, est. $990,000 relocation 2.08 mi. section Rte. 37 on eastern outskirts of Massena, St. Lawrence Co.
N. Y.—**Hornell Constr. Corp.**, Hornell, N. Y., CA **$846,178**, est. $944,000, widening and resurf. 5.58 mi. section Rte. 70 starting about 2 mi. east Rte. 36 intersection at N. Hornell and extending eastward thru Howard to Rte. 16, Big Creek, Steuben Co. Bids Apr. 24. Grand total $10,817,745. CD 4/25, under LB.

▲ **A. S. Wikstrom, Inc.**, Box 217, Skaneateles, N. Y., LB **$9,760,000** (preserving road) **$9,750,000** (permitting necessary road damage), channel imprvt., incl. excav. approx. 3,000,000 cu. yd. material in Tailrace Area for Barnhart Island Power Plant in area of St. Lawrence River channel, St. Lawrence Co. Spec. No. Pa-5-11038, Contr. No. 47, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids June 19. CD 5/22.

† **L. Johnson Constr. Co.**, 608 Forshay Tower, Minneapolis, Minn., LB **$733,606** (6 bidders) breakwaters and dredging of Barcelona Harbor from entrance channel and harbor, Dunkirk, Chautauqua Co., NEW YORK. U. S. Eng., Engineer Park, Buffalo 7, N. Y. Bids June 17. CD 5/28.

▲ **Charles F. Vachris, Inc.**, 9024 Ditmas Ave., Brooklyn, N. Y., CA **$2,714,200**, covering removal of old Piers 10, 11 and 12 and dredging and constr. of PIER 3 substructure and deck at Brooklyn Port Authority Piers, BROOKLYN, N. Y. Port of New York Authority, 111 Eighth Ave., New York, Zone 11, N. Y. Bids May 23. CD 4/24.

Carl Buhr, Inc., Grand Central Terminal Bldg., New York, N. Y., CA **$844,850**, constr. of CONTROL TOWER SUPERSTRUCTURE, NEWARK, N. J. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. CD 4/5/57.

▲ **The Mal-Bros. Contracting Co.**, 38-48 Highland Ave., Newark, N. J., CA **$1,714,540**, paving and utilities for Air Cargo Center and Control Tower, Contr. NA-470.001 and NA-480.001, NEWARK, N. J. The Port of New York Auth., Room 1100, 111 Eighth Ave., New York 11, N. Y. Bids June 17. CD 6/19, under LB.

▲ **Arthur Venneri Co.**, 300 North Ave. East, Westfield, N. J., CA **$1,435,000**, three 1 story, masonry AIR CARGO bldgs. and a 1 story, masonry cargo service bldg. in the new Air Cargo Center, Contr. NA-480.002, NEWARK, N. J. Port of New York Auth., Room 1100, 111 Eighth Ave., New York 11, N. Y. Bids June 10. CD 6/19, under LB.

▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St. Baltimore, Zone 2,
Taylor and Keebler, Clinton, Md., CA **$1,187,207**, grading, drainage, surf. new northbound lane US 301, 6.142 mi. also rehabilitation of existing US 301 along same Rte. distance 12,368 mi. P-713-4-320, Prince George Co. Bids Mar. 4, CD 3/11 under LB.

BUILDINGS—LB & CA

▲ **M. J. Peterson Inc.**, 860 Englewood Ave., Buffalo 23, N.Y. Owner Builds **$5,000,000**, 265 HOMES on 300 acre tract along Niagara Falls Blvd., AMHERST, N.Y. CD 1/8.

▲ **Siegfried Constr. Co., Inc.**, 6 N. Pearl, Buffalo 2, N. Y., CA **$1,500,000**, STUDENT UNION BLDG., CD 11/13; CA $850,000 LIBRARY CD 4/8. BUFFALO, N. Y. Canisius College, Main and Jefferson Sts., Buffalo, N. Y.

▲† **Bonwit Constr. Co.**, 370 Lexington Ave., New York 17, N.Y., LB **$3,748,736** (5 bidders) Capehart HOUSING at Fort Jay, Governors Island. FORT JAY, N.Y. U.S. Eng., 111 E. 16 St., New York Zone 3, N.Y. Bids June 19, CD 6/16 under LB.

▲† **Anthony P. Miller Co., Inc.**, 3333 Artic Ave., Atlantic City, N. J., CA **$4,697,239**, 290 units Capehart HOUSING at Niagara Air Force Base. NIAGARA FALLS, N. Y. Procurement Officer, Niagara Air Force Base, Niagara Falls, N. Y. Bids May 27. CD 5/28, under LB.

▲ **Paul Schmergel & Melvin Bernsohn**, 199 East Main St., Babylon, N. Y., Own forces, **$5,000,000**, 300 HOUSES on West Park Ave., OAKHURST, N. J.

▲ **Luria Engineering Co.**, Div. of Luria Steel & Trading Corp., 1745 Eaton St., Bethlehem, Pa. LB **$1,059,000.** (5 bidders) general constr. HIGH SCHOOL and GRADE SCHOOL for Old Forge Borough School Dist., OLD FORGE, PA. Pa. P. School Bldg. Auth., 101 S. 25th St., Harrisburg, Pa. Bids June 19. CD 5/22.

▲ **Consolidated Engr. Co.**, 20 E. Franklin St., Baltimore 2, Md., CA **$2,000,000**, 7 story 52 x 224 ft. rein.-con. brick, steel, tile block, terra cotta HOSPITAL addn., BALTIMORE, MD. Church Home & Hospital, Broadway and Fairmount Ave., Baltimore, Md. CD 1/24.

▲ **Mullen Contr. Corp.**, 3945 Greenmount Ave., Baltimore 18, Md., CA **$1,194,000**, brick, limestone, concrete, steel STUDENT'S RESIDENCE and Dining Hall, BALTIMORE, MD. College of Notre Dame, Charles St. Ave., Baltimore, Md. CD 6/10, under LB.

SOUTH

BUILDINGS—BA

▲ **Ky., Lexington**—DORMITORIES—BA 8/5—College of the Bible, S. Limestone St., Lexington, (selected bidders) (A) four dormitories; (B) college office bldg. addn. $1,000,000. Meriwether Marye, & Assocs., 248 E. Short St., Lexington, Ky., archts. CD 12/13.

HEAVY CONSTRUCTION—LB & CA

▲† **Hyde Constr. Co.**, 1804 N. Mill, Jackson, Miss., CA **$6,841,152**, runway and parking area pavement and utilities, U. S. Naval Air Station. NBy 13944 MERIDIAN, MISS. Dist. P. Wks. Office, Sixth Naval Dist., Bldg. No. 13, U. S. Naval Base, Charleston, S. C. Bids June 10. CD 6/16 under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

Ill., **Carlyle**—BA 7/14—City, City Hall, water main extensions including c. i. pipe, valves, fire hydrants, fitting and appurtenances, Plans deposit $20, Clark, Daily & Dietz, City Hall, Carlyle, Ill., and 211 N. Race St., Urbana, Ill., engrs., CD 12/9/54.

▲† **Wis., Kansasville**—AIR BASE IMPRVS.—BA 7/23—U.S. Eng., 475 Merchandise Mart, Chicago, Ill., central heating plant with two 31,200 MBH each, boilers, bunkers, storage yard, ash handling equipment, jet fuel storage facilities, Richard I. Bong Air Force Base, ENG-11-032-58-104, $2,000,000, CD 9/17.

Ill., **Peoria**—BA 7/25—Greater Peoria Sanitary & Sewage Disposal Dist., 2322 S. Darst St., sanitary sewers in Grand View Dr. area, $135,000, CD 1/9/51.

▲ **Ind., Crown Point**—INFIRMARY—BA 6/30—Lake Co. Bd. of Comm., 104,000 sq. ft., 1, 2 and 4 story infirmary, State Rd. 55, $1,300,000., Beine, Hall & Curran, 607 Broadway, Gary, Ind., archts. CD 8/17/55.

▲ **Ill., Chicago**—DORMITORY—BA 7/8—University of Chicago, 5801 S. Ellis Ave., Chicago, 10 story with bsmnt., brick and stone men's dormitory bldg., 55th and University Ave., $2,400,000, Harry M. Weese, 104 S. Michigan Ave., archts., CD 3/6.

Ind., **Gary**—SCHOOL—BA 7/8—City of Gary, 10 Place and Virginia St., 1 story, brick elementary school, 7th and Chase Sts., $350,000, Joseph B. Martin & Assocs., 1122 Aetna St., Gary, archts.

Ind., **Gary**—SCHOOL—BA 7/15—City of Gary, 10 Place and Virginia St., 1 story, brick, elementary school and gymnasium, 17th and Kentucky Sts., $500,000, Caudill Rowlett & Scott, 300 Bettes Bldg., Oklahoma City, Okla., archts.

▲ **Ill., Lake Forest**—SCHOOL ADDN.—BA 7/15—School Dist. 115, 1285 McKinley Ave., Lake Forest High School addition, 1285 McKinley Ave., Lake Forest, $2,100,000, Stanley Anderson & Associates, 270 E. Deerpath Rd., Lake Forest, Ill., archts., CD 2/15/57.

▲ **Ind., South Bend**—LIBRARY—BA 7/18—School City of South Bend, 228 S. St. Joseph St., 2 story mezz., brick library, Wayne and Main Sts., $1,000,000, Chas. Cole & Son, 220 W. LaSalle St., archts., CD 11/15.

BUILDINGS—BA

▲ **O., Springfield**—SCHOOL—BA 7/29—Bd. Educ., Springfield School Dist., 40 E. College Ave., High School, **$1,800,000.** CD 11/13/56.

HEAVY CONSTRUCTION—LB & CA

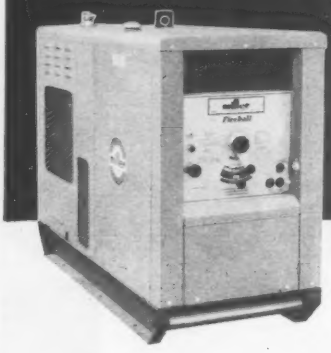
▲† **FitzSimmons & Connell Dredge & Dock Co.**, 10 S. LaSalle St., Chicago, Ill., CA **$5,800,807**, Calumet River Lock & Control Works at Calumet River approx. 4,000 ft. S. of Lake Calumet Terminal basin as part of Calumet Sag imprvs., etc., CHICAGO, ILL. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids May 29. CD 6/6, under LB.

4 in 1

3 in 1

2 in 1

GASOLINE ENGINE DRIVEN WELDER/POWER PLANTS



FIREBALL AMPERAGE RANGES	
METALLIC	INERT GAS
35-100 AC	35-75 AC
65-160 AC	65-160 AC
110-400 AC	150-375 AC
35-80 DC	35-100 DC
75-175 DC	85-225 DC
125-350 DC	170-375 DC

DAH-350 FIREBALL four-in-one model is the only complete unit made to incorporate an ac-dc welder for (1) metallic arc, or (2) tungsten inert gas welding, plus (3) ac power plant, and (4) 1 KW dc power while welding. Twelve separate amperage ranges as shown above. Additional standard equipment features include a polarity switch, either continuous or "start only" high frequency and an automatic inert gas control panel with solenoid valve and postflow timer. Rated output at 100% duty cycle: 250 amps dc tungsten arc; 300 amps ac tungsten arc. Generator: 10 KW of 115/230v, single phase, 60 cycle ac.

DA-300 BIG RIG. Combination ac-dc welder, plus an ac power plant, plus 1 KW of dc power while welding, give this model three-in-one versatility. Generator rated at 10 KW of 115/230v, single phase, 60 cycle ac. Welding ranges in amperes are: (dc) 75-175 or 125-350; (ac) 65-160 or 110-400. Rated output at 100% duty cycle: 250 amps dc at 40 volts and 300 amps ac at 40 volts.

D-250 ROUSTABOUT provides a two-in-one arrangement whereby either of two dc welding current ranges — 75-175 amps or 125-350 amps — and 1 KW of 115v dc auxiliary power are available simultaneously. Rated output is 250 amps at 40 volts, 100% duty cycle. Generator produces 10 KW of 115/230v, single phase, 60 cycle ac.

All models offered with skids or trailers. Complete specifications and prices sent promptly.

miller ELECTRIC MANUFACTURING COMPANY, INC.

Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal • APPLETON, WISCONSIN

miller WELDERS

from

OFFICE MANAGER

to

GENERAL MANAGER

Yes, that is the quality of the personnel available to your organization through the Classified Advertising pages of ENGINEERING NEWS-RECORD.

Classified Advertising Division

ENGINEERING NEWS-RECORD

330 W. 42nd St. New York 36, N. Y.

ELGOOD

Hydraulic & Mechanical

JACKS

Capacities to 600 Tons—48" Travel

Jacking Equipment for

Pipe Pushing
Erection
Pile Driving
Pile Testing
Slip Forms
Tunnel Shields
Prestressed Concrete
many other applications

RENTALS — SALES — DESIGN

Large Stock Immediate Delivery

Write for Job Fact Sheets

ELGOOD EQUIPMENT CORP.

373 Ten Eyck St., Brooklyn, N.Y.

HY 7-5445

▲ **Hunkin-Conkey Constr. Co.**, 1740 E. 12 St., Cleveland, O., LB **$3,000,000**, total est. $7,500,000, (7 bidders), SALT MINE on Whiskey Island, 1st contract, mine shaft 2,000 ft. deep, CLEVELAND, O., International Salt Co., Scranton Life Bldg., Scranton 3, Pa. Bids June 1. CD 5/6.

BUILDINGS—LB & CA

▲ **Turner Constr. Co.**, 105 W. Adams St., Chicago, Ill., CA **$4,282,897**, 8 story, CHEMICAL LABORATORY bldg. R-18 addn., concrete paving, NORTH CHICAGO, ILL., Abbott Laboratories, Sheridan Rd. and 14th St., North Chicago, Ill. Bids May 29. CD 6/23, under LB.

▲ **Nicholson & Co.**, 10 Rockefeller Plaza, New York, N. Y., CA Est. **$8,000,000**, new CEMENT PLANT, DUNDEE, MICH. St. Lawrence Cement Co., Clarkson, Ont., Canada. CD 11/21, under Dundee Cement Co.

▲† **Gust K. Newberg Constr. Co.** and **Hoyle-Newberg Constr. Co., Inc.**, 2040 N. Ashland, Chicago, Ill. CA **$10,127,000**, 235 units Capehart HOUSING at K. I. Sawyer Air Force Base, MARQUETTE, MICH. Base Procurement Officer, K. I. Sawyer Air Force Base, Marquette, Mich. Bids June 18. CD 6/20, under LB.

▲† **A. K. Kaplen & Son Ltd.**, and **The Ferber Co.**, 16 Johnson Ave., Hackensack, N. J. (Joint Venture) CA **$6,106,500**, 400 units Capehart HOUSING at Lockburne Air Force Base, ENG-33-617-58-52, COLUMBUS, O. Air Force, Defense Dpt., Pentagon, Arlington, Va. Bids May 7. CD 5/14, under LB.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲† **Neb., Fort Crook**—SAC CONTROL CENTER ADDITION—BA 7/24—U. S. Eng., 1709 Jackson St., Omaha, Zone 2, constr. SAC control center addn. Offutt Air Force Base, ENG-25-066-58-120. $1,200,000-$1,500,000. CD 5/23, under LB.

▲† **Minn., Minneapolis**—HANGAR—BA 7/29—Minneapolis-St. Paul Metropolitan Airports Comn., 2429 University Ave., St. Paul, main hangar for Northwest Airlines main base at Wold-Chamberlain Field. **$3,000,000.** W. Butler Co., 1300 Minnesota Bldg., St. Paul, Minn., engrs. CD 6/17/55.

BUILDINGS—BA

▲ **Tex., Houston**—OFFICE, etc.—BA 7/15—Texas Co., 720 San Jacinto St., 13 story office and addns. **$5,500,000.** Kenneth Franzheim, 802 Lovett and Chas. S. Chase, 2317 Bissonet, assoc. archts. CD 3/4.

▲ **Tex., San Angelo**—DORMITORIES—BA 7/15—San Angelo College, c/o Dr. R. M. Covness, pres., 2 story women's dormitory, 1 story student union bldg. and convert existing cafeteria into men's dormitory and apartments for married students and faculty members. $1,165,000. Plans deposit $50. Wilson, Patterson & Assocs., 601 Bailey St., Fort Worth, archts. CD 12/20/56.

ROCKFORD

Small Spring Loaded

Heavy Duty Spring Loaded

Oil or Dry Multiple Disc

Heavy Duty Over Center

Power Take-Offs

Speed Reducers

CLUTCHES

Are Adapted for Use with High-Speed Engines

Because modern construction methods require faster and faster delivery hauls with more and more cycles per hour, high speed engines are a must. The centrifugal force they develop presented a clutch problem—until ROCKFORD CLUTCHES were designed to minimize the effect of their multiplied degree of centrifugal force. If you want your heavy-duty machines to stay more hours ON THE JOB with less time IN THE SHOP—for adjustments and repairs—it will pay you to investigate the more torque grip, longer work life, and better heat disposal provided by ROCKFORD CLUTCHES.

BW SEND FOR THIS HANDY BULLETIN
Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER
313 Catherine St., Rockford, Ill., U.S.A.
Export Sales Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.

CLUTCHES

▲ **Minn., Mankato**—LABORATORY—BA 7/17—State Dpt. of Admin., 19 State Capitol, St. Paul, laboratory school at Minnesota State College. $1,200,000. Plans deposit $50. Graffunder-Nagle & Assocs., 688 Sexton Bldg., Minneapolis, Minn., archts. CD 7/23.

HEAVY CONSTRUCTION—LB & CA

▲† **H. B. Zachary Co.**, Constr. Div., Box 10188, San Antonio 21, Tex., LB **$3,414,000**, RANGE INSTRUMENTATION FACILITIES (Several concrete bldgs.), White Sands Proving Grounds, ENG-29-005-58-132, LAS CRUCES, N.M., U.S. Eng., Box 1538, Albuquerque, N.M., Bids June 12, CD 5/22.

▲ **F. R. Comb Co.**, 2901 Aldrich Ave. South, Minneapolis, Minn., CA **$2,950,000** general contract, (1) Engine Bldg., Boiler Plant, Water Reservoir (2) Stores and Shops Bldg. at Northwest Airlines Main Base at Wold-Chamberlain Field, MINNEAPOLIS, MINN. Minneapolis-St. Paul Metropolitan Airports Comn., 2429 University Ave., St. Paul, Minn. Bids June 11. CD 6/17, under LB.

▲† **T. L. James Co., Inc.**, Box 531, Ruston, La. CA **$1,909,323.** operational apron, etc. at Perrin Air Force Base, ENG-34-066-58-60, SHERMAN, TEX. U. S. Eng., Box 61, Tulsa 2, Okla. Bids May 27. CD 6/4, under LB.

▲† **T. C. Bateson Constr. Co.**, P.O. Box 35351, Airlawn Station, Dallas, Tex. CA **$5,763,700.** 366 family HOUSING units Connally Air Force Base, Inv. 41-611-58-51 WACO, TEX. Procurement Officer, Connally Air Force Base, Waco, Tex. Bids May 29. CD 6/13.

▲† **U & C Constr. Co.**, (United Builders and Cay Inc.) 1616 Republic Bldg., Oklahoma City, Okla., LB **$7,981,900**, est. $5,880,000, 490 units family HOUSING, Kirtland Air Force Base, ENG-29-601-58-120, ALBUQUERQUE, N. M., Dpt. Air Force, c/o Directorage of Procurement, Kirtland Air Force Base, N. M. Bids June 5. CD 5/19.

▲† **John F. Beasley Constr. Co.**, Mercantile Bank Bldg., Dallas, Tex. CA **$1,929,218**, bridge structure over Grand River bridge near Mobridge, Oahe Reservoir Proj. ENG-25-066-58-117 SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids about June 12. CD 4/25.

▲† **Lippert Brothers Co.**, 2800 N. Santa Fe St., Oklahoma City 5, Okla., LB **$1,317,397**, est. $1,357,415 reserve forces hangar, Tinker Field, ENG-34-066-58-75, OKLAHOMA CITY, OKLA. U. S. Eng., Box 61, Tulsa, Okla. Bids June 11. CD 5/27.

▲† **Acme Constr. Co.**, Box 66-W, Oklahoma City, Okla. CA **$1,281,489.** air national guard facilities, Will Rogers Field, ENG-34-066-58-61, OKLAHOMA CITY, OKLA. U. S. Eng., Box 61, Tulsa, Zone 2, Okla. Bids June 11. CD 6/17, under LB.

▲† **Steenberg Constr. Co.**, 1371 Marshall Ave., St. Paul, Minn., LB **$1,534,330**, constr. NIKE installations near Roberts, Wis.; LB **$1,475,754**, NIKE installations near Bethel, Minn.; LB **$1,470,767**, NIKE installations near Farmington, Minn.; LB **$1,464,531**, NIKE installations near St. Bonifacius, Minn., Inv. ENG-21-018-58-19, WISCONSIN-MINNESOTA. U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul, Minn. Bids June 24. CD 6/6.

▲† **Western Constr. Corp.**, 400 Benson Bldg., Sioux City, Iowa, LB **$10,822,282**, est. $11,837,347 (5 bidders) SAC DISPERSAL FACILITIES, Wright Patterson Air Force Base, ENG-15-029-58-55, DAYTON, O. U. S. Eng., P.O. Box 59, Louisville 1, Ky. Bids June 24. CD 5/19.

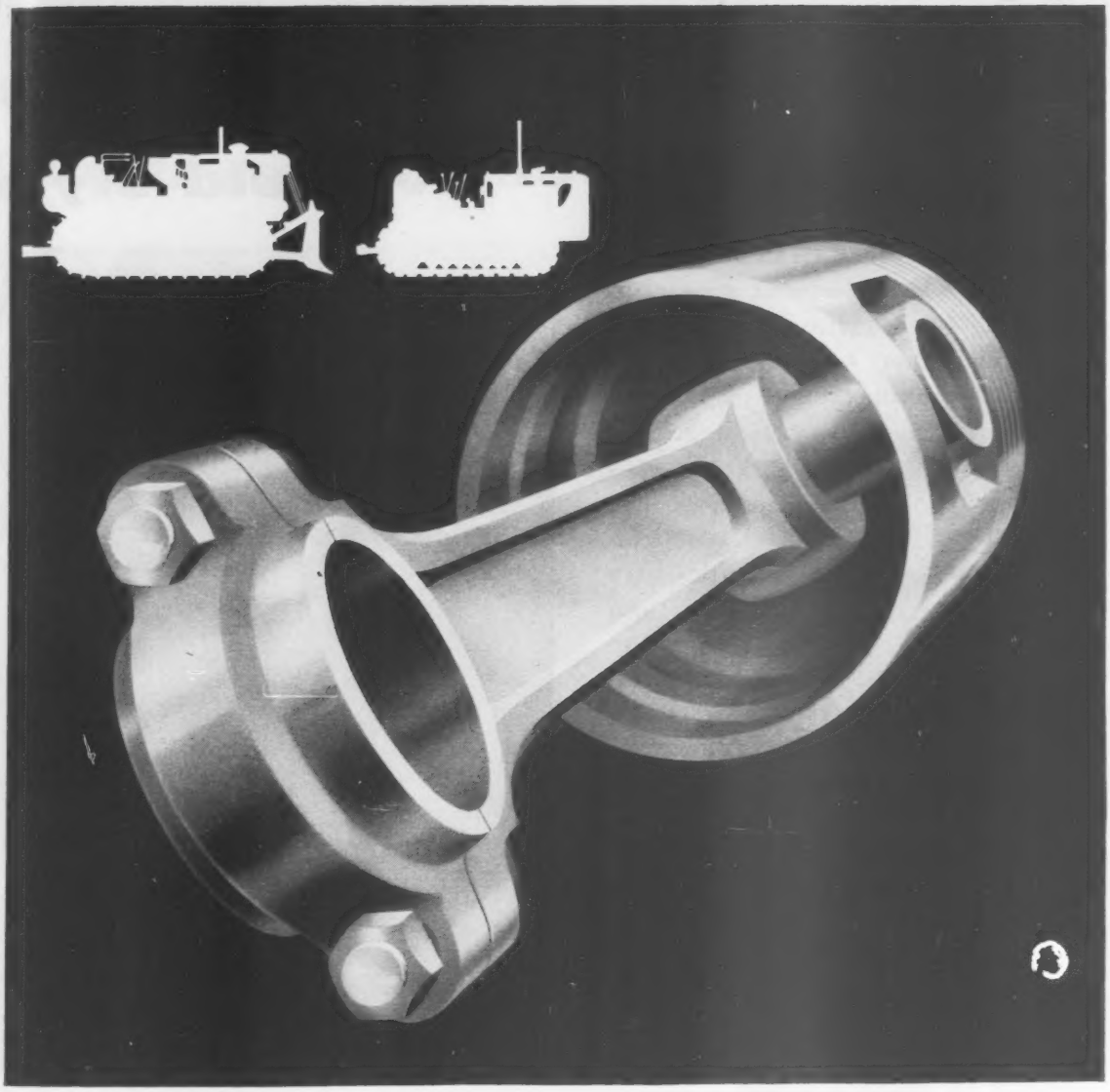
▲† **Morrison-Knudsen Co.**, 319 Broadway Ave., Boise, Idaho, **F & S Constr. Co.**, 1330 Chicago St., Butte, Mont., and **Kaiser Eng. Div. of Henry J. Kaiser Co.**, CA **$22,822,624**, Navajo Dam, on San Juan River, Rio Arriba Co., NEW MEXICO and COLORADO, Bureau Reclamation, Denver, Colo. Bids June 19. CD 6/23, under LB.

BUILDINGS—LB & CA

▲† **Modern Home Mfg. Corp.**, and **Fowler-Veranth Constr. Co.**, Drawer U, Biwabik, Minn., (joint venture), CA **$3,890,850**, 242 units Capehart HOUSING at Duluth Air Force Base, DULUTH, MINN. Base Procurement Officer, 343rd Fighter Group (ADEF) U.S. Air Force, 510 Fidelity Bldg., Duluth, Minn. Bids May 22. CD 6/5, under LB.

▲ **D. C. Bass & Sons**, Bass Bldg., Enid, Okla., CA **$1,383,383** general contract, 18-two story MARRIED STUDENTS APARTMENTS, Campus of University, COLUMBIA, MO. Curators of University of Missouri, bus. mgr., 116 Jesse Hall, Columbia, Mo. Bids May 22. CD 5/28, under LB.

▲ **George Bennett Constr. Co.**, 3252 Roanoke, Kansas City, Mo., LB **$2,524,540** (10 bidders), general contract, LIBRARY and SCHOOL BOARD ADMINISTRATION BLDG., KANSAS CITY, MO. Bd. Educ., Kansas City Public Library, 6th & Minn. Ave., Kansas City, Mo. Bids June 19. CD 5/23, under Kansas City, Kans.
Squire Electrical Co., 1813 Grand, Kansas City, Mo., LB **$497,777** (6 bidders), electrical work (Kansas City, Mo.)
Interstate Heating and Plumbing Co., 2120 Washington, Kansas City, Mo., LB **$605,672** (6 bidders), heating (Kansas City, Mo.).



cut deposits, overhauls—and costs

Heavy-duty Estor D-3 was formulated especially to meet the extreme demands of diesel tractors that require a "series 3" lubricant.

Its powerful detergent action works *full-time* to fight the formation of hard carbon, crankcase sludge, gum and other dangerous deposits. Estor D-3 will even help dissolve gum deposits that may have previously been formed.

Because Estor D-3 keeps engines so clean, an effective power seal is always maintained between pistons and cylinder liners. Result: *full power, outstanding fuel economy — and long overhaul cycle.* Contractors using Estor D-3 report substantially reduced operating costs. In many cases, further savings can be realized by standardizing on Estor D-3 for *all* diesel earth-moving tractor equipment.

To get the best performance on your job by using Estor D-3, contact your nearest Esso office in New England, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, the Carolinas, Tennessee, Arkansas, Louisiana, and the District of Columbia. Or write: Esso Standard Oil Company, 15 West 51st St., New York 19, N. Y.

ESTOR® D-3

Esso

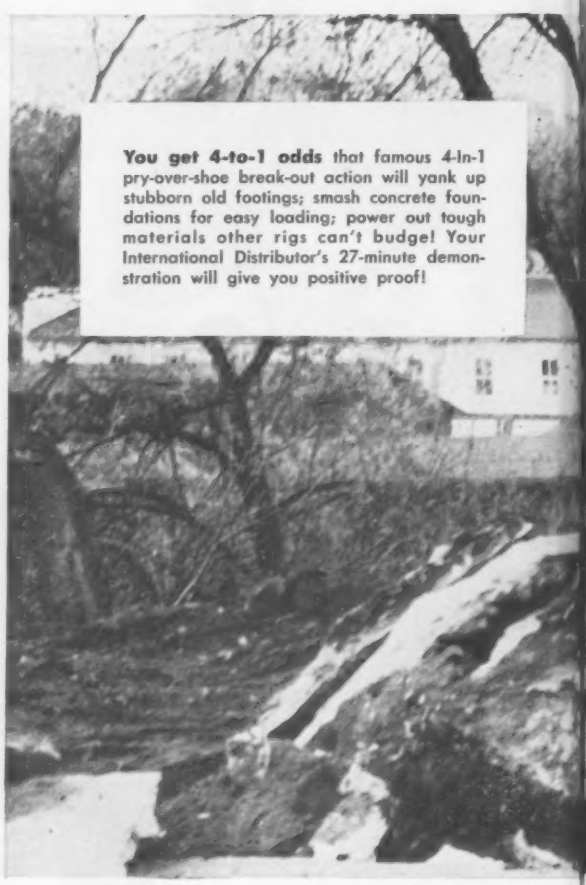
ESSO RESEARCH works wonders with oil

Just 27 minutes with your International Distributor will show you:

How a multiple-duty four-in-one giv

over old-style "si

Get in the driver's seat. Grab hold of the machine-selector lever. See what it means to command the 4-to-1 advantages which only an International Drott 4-In-1 can give you—in multiplied profit opportunities; in getting 4-machine utility for one moderate first investment; in cutting labor and operating cost. Find out why nimble 4-In-1's are snatching profitable jobs from "under the buckets" of far costlier boom-type rigs! Measure the extra value of exclusive shock-swallowing Hydro-Spring performance-protection. And prove to yourself that the 4-In-1 can outdig and outload any "single-action" excavator loader! Ask your International Drott Distributor now for the 27-minute 4-In-1 demonstration!



You get 4-to-1 odds that famous 4-In-1 pry-over-shoe break-out action will yank up stubborn old footings; smash concrete foundations for easy loading; power out tough materials other rigs can't budge! Your International Distributor's 27-minute demonstration will give you positive proof!

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL® DROTT®

You get 4-to-1 odds that the 4-In-1, bottom-dumping as a clamshell, will give you positive self-cleanout of sticky, gummy materials—even the kind that clings like bread dough inside ordinary buckets! You get big odds, too, that 4-In-1 bottom-dumping will give you a load-heaping *dumping—height advantage* of up to 30 inches over ordinary roll-forward dumping!

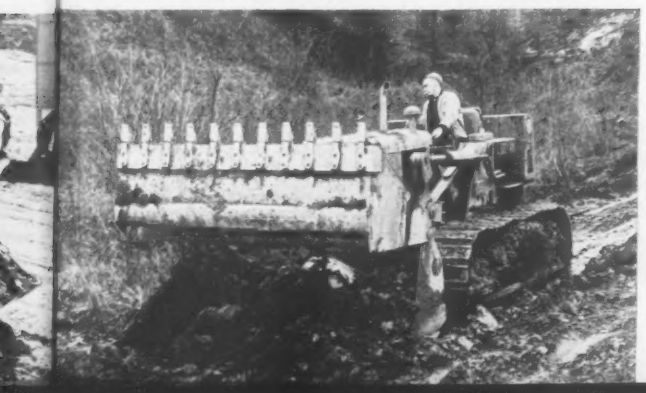
You get 4-to-1 odds that the 4-In-1 as a "carry-type scraper" will grade, strip, or spread—will give you these accurate, big-capacity actions that "single-action" loaders can't even begin to attempt! You'll get eye-witness evidence, in this 27-minute demonstration, that this labor-saving 4-In-1 action can pile up profits for you, on job after job!

ngives you 4-to-1 odds

yle "single-action" loaders!

You get 4-to-1 odds that you'd need a bona fide, full-sized blade outfit, and a good one, to match the earth-rolling, hard-material-digging performance of the 4-In-1 as a bulldozer. You'll be amazed at the ease of regulating dozing depth with "radius control." This TD-14 4-In-1 is reconditioning a coal mine haul road in Floyd County, Kentucky!

You get 4-to-1 odds that the 4-In-1, as a clamshell, will pick up, carry, and load bulky, heavy, odd-shaped materials impossible for single-action rigs even to get in their buckets! *This TD-6 4-In-1 is carrying a big chunk of concrete footing from excavation to truck.* And as a clamshell, the 4-In-1 gives you a space-saving, *one-gulp* bucket fill especially in loose materials!



▲ **Kraus-Anderson, Inc.**, 501 South Eighth St., Minneapolis, Minn., CA **$1,827,342**, general contract, Dayton-Radisson GARAGE 340 ft. (ramp) between Seventh St. and Eighth St. MINNEAPOLIS, MINN. Dayton's, Seventh St. and Nicollet Ave., Minneapolis, Minn. Bids May 9. CD 5/21, under LB.

▲ **Geo. Bennett Constr. Co.**, 3252 Roanoke, Kansas City, Mo., CA **$2,615,640**, Est. $4,900,000, general contract, 11 story, ind. limestone etc. PUBLIC LIBRARY and SCHOOL BOARD ADMINISTRATION BLDG. KANSAS CITY, MO. Bd. Educ., Supt. Schools, 9 and Locust, Kansas City, Mo. Bids June 19. CD 6/23, under LB.
Squire Elec. Co., 1813 Grand, Kansas City, Mo., CA **$534,828**, electrical work (Kansas City, Mo.).
Inter-state Htg. & Plg. Co., 2120 Washington, Kansas City, Mo., CA **$606,496**, heating (Kansas City, Mo.).

Risch Bldg., and Real Estate Co., 911 Gravois Rd., St. Louis 23, Mo., CA Est. **$374,000**, 44-one story brick, concrete, etc. RESIDENCES, Louis, Upton and Field Sts., ST. LOUIS, MO. Granbury Real Estate Co., 9100 Gravois Rd., St. Louis 23, Mo.

▲† **Manhattan Constr. Co.**, 905 Manhattan Blvd., Muskogee, Okla. LB **$1,333,330** Sch. 1, National Guard Facilities, ENG-34-066-58-67, TULSA, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids June 18. CD 5/28;
Tecon Corp., 1201 Main St., Dallas, Tex., LB **$869,940**. Sch. 2, National Guard Facilities, ENG-34-066-58-67 (Tulsa, Okla.).

▲† **F. F. Fritch**, 6834 Harry Hines Blvd., Dallas, Tex. LB **$6,489,000** (5 bidders) constr. 400 Capehart HOUSING UNITS, Offutt Air Force Base, FORT CROOK, NEB. Procurement Officer, Offutt Air Force Base, Omaha, Neb. Bids June 17. CD 5/21.

Knutson Constr. Co., 2138 Welch St., Houston, Tex. CA **$361,311**, 1 story and bsmnt. OFFICE, HOUSTON, TEX. Houston Speech & Hearing Center, c/o Wilson Morris, Crain & Anderson, archts. 3330 Graustark St., Houston, Tex. CD 6/27.

R. W. Meek, Contractor, Mesquite, Tex. Purchase and Hire. **$508,059**, 49 DWELLINGS in Casa View No. 16 subdivision MESQUITE, TEX. CD 6/20.

▲† **Heers Assocs.**, 5917 Jurupa, Riverside, Calif. CA **$2,435,500**. 150 units Capehart HOUSING, Malmstrom Air Force Base, GREAT FALLS, MONT. Procurement Officer, Malmstrom Air Force Base, Great Falls, Mont. Bids June 10. CD 6/20, under LB.

▲ **Platt Rogers Constr. Co.**, P. O. Box 761, Colorado Springs, Colo., LB **$1,302,000**, est. $1,500,000, 6 story, bsmnt. and penthouse, 55x233 ft. RETIREMENT HOME, infirmary at Park Manor apartment bldg. for elderly persons, DENVER, COLO. Presbyterian Hospital, E. 19th Ave. and Gilpin St., Denver, Colo. Bids June 10. CD 5/28.

C.L.GUILD

The COBI Pile—driven with a patented COBI expanding mandrel—the most sensational cast-in-place pile development in the past fifty years has many proven advantages.

- ECONOMY
- STRAIGHTNESS
- EASE OF INSTALLATION
- WATERTIGHT
- EASE OF INSPECTION
- MAINTENANCE OF SHAPE

Write or phone for eight-page brochure which describes the COBI Pile.

Call C. L. Guild for estimates on any type of piling job anywhere in the country.

C. L. GUILD CONSTRUCTION CO., INC.
90 Water Street, East Providence, R.I.
BOSTON, MASS. SYRACUSE, N.Y. WASHINGTON, D.C. HOUSTON, TEXAS KANSAS CITY, MO.

▲ **I. E. Millstone Constr. Co.**, 8510 Eager Rd., Brentwood 17, Mo., LB **$1,697,000** Est. over $1,000,000, base bid, general contract incl. mechanicals, electric, etc., two 4-story men's and women's RESIDENCE HALLS, each 61 x 129 ft. east of Big Bend Blvd. between Forsyth and Wydown Blvd. Proj. No. Mo. 23 CH-38(D), ST. LOUIS, MO. Washington University, Skinker at Lindell Blvd., St. Louis 5, Mo. Bids June 13 CD 6/3.

▲ **Dickmann, Pickens & Bond Constr. Co.**, Gazette Bldg., Little Rock, Ark., CA **$3,766,397** base bid general contract, county HOSPITAL, PINE BLUFF, ARK. Jefferson Co. Court House, Pine Bluff, Ark. Bids June 5. CD 6/19, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

▲ **Calif., Los Angeles**—BA 7/17—Metropolitan Water Dist. of Southern California, 306 W. 3 St., constr. 6 siphons, 7 mi. for the Colorado River Aqueduct between San Jacinto and Val Verde Tunnels and 4 siphons, ½ mile for the 2nd San Diego Aqueduct between the Colorado River Aqueduct and Auld Valley in county of Riverside near Hemet, Spec. 558. $7,680,000. CD 5/7, under LB.

▲ **Calif., San Rafael** — BA 7/23 — Marin Municipal Water Dist., 874-4th St., Bon Tempe water treatment plant and supply lines. $1,000,000. Plans deposit $30. CD 11/15/49.

† **California**—BA 7/30—Bureau Reclamation, Dpt. Interior, Oak View, chlorination stations, Casitas No. 1, Casitas No. 2, Matilija No. 2 and Rincon, Ventura River Proj., Spec. DC 5067; adv. ENR 7/3. CD 9/16.

BUILDINGS—BA

Idaho, Caldwell—PLANT—BA 7/11—Caldwell, Unlimited, constr. trailer plant. Kit. Manufacturing Co., lessee.

▲ **Calif., Campbell** — SCHOOL — BA 7/15 — Campbell Union High School Dist., c/o Supt., 151 N. Winchester Rd., frame and stucco, structural steel and brick veneer Del Mar High School. $2,150,000. Plans deposit $100. Clark, Stromquist, Potter & Ehrlich, 3200 Hanover St., Palo Alto, archts. CD 1/10.

▲ **Calif., San Francisco**—SCIENCE BLDG.—BA 7/22—State Div. Architecture, 1120 N. St., Sacramento, 3 story, 65,800 sq. ft. science bldg. addn. at San Francisco State College. W.O. 4005GC-52. $1,150,000. Plans deposit $50. CD 7/25.

HEAVY CONSTRUCTION—LB & CA

▲† **Arch Dam Constr. Co.**, 1024 Omaha National Bank Omaha, Neb. (Peter Kiewit Sons Co., Morrison Knudsen Co. Inc., Mid-Valley Utilities Constructors Inc. and Coker Constr. Co.) CA **$29,602,497**. constr. Flaming Gorge Dam and power plant on Green River Northern Utah, Colorado River Storage Proj. approx. 45 mi. north of Vernal in Dagget Co. UTAH. Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo. Bids June 10, Awarded June 19 CD 6/12 under LB.

▲† **Vinnell Steel Co.**, Irwindale, Calif. LB **$3,778,000**. furnishing eight 15 ft. dia. steel penstocks 670 ft. long and four 8 ft. dia. steel outlet pipes 80 ft. long (total est. weight, 19,450 lbs.) for Glen Canyon Dam, Colorado River Storage Proj. Inv. No. DS 5052 ARIZONA. Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo. Bids June 17 CD 6/12.

▲ **CALIFORNIA**—Div. of San Francisco Bay Toll Crossings, c/o Projs. Engr., 151 Fremont St., San Francisco. **Guy F. Atkinson Co.**, 410 W. Orange Ave., South San Francisco, Calif. LB **$7,462,731**. (4 bidders) repave terminal ramps, remove railroad ballast grading, railroad ballast as base material on other areas, storing or disposain of utilities related work, San Francisco-Oakland Bay Bridge terminal, San Francisco Co. CD 3/18.

▲† **Rothschild, Raffin & Weirick**, 274 Brannan St., San Francisco, Calif., LB **$6,500,527**, est. $6,538,000 (7 bidders) Sacramento Deep Water Channel Proj., barge canal lock, bascule bridge, power, control and lighting sys., Spec. 1455, ENG-04-167-58-40, CALIFORNIA. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids June 24. CD 5/8.

† **Caro Constr. Co.**, 6629 E. Kellogg, Wichita, Kan., LB **$444,700** Est. $389,400 (2 bidders) 2 story NURSES QUARTERS and UTILITIES, air-conditioning, outside utilities, etc., ENG-23-028-58-67, FORT RILEY, KAN. U.S. Eng., 1800 Federal Office Bldg., Kansas City 6, Kan. Bids June 12 CD 5/10.

Holden Constr. Co., 1310 Electric Bldg., Fort Worth, Tex. LB **$807,483** est. $900,000 3 story and bsmnt. PHYSICS-MATH BLDG. DENTON, TEX. North Texas State College, Denton, Tex. Bids June 19 CD 6/4.

▲† **R. D. Lowman**, 1617 E. Missouri, El Paso, Tex. CA $1,149,411; Sched. A&D G. M. Range Training facilities, ENG-29-005-58-118, Fort Bliss, El PASO, TEX. U.S. Eng., Box 1538, Albuquerque, N.M. Bids May 27, CD 6/17 under LB.

West Wood Inc., Constr. Div. 2147 Walnut, Garland, Tex. Owner builds. **$348,500.** 30 DWELLINGS, GARLAND, TEX. CD 6/19.

Joe Morris and Homes Inc., 85½ Highland Park Shopping Village, Dallas, Tex. Owner builds. **$377,000** 36 DWELLINGS **$365,500** 33 dwellings on 34 acre tract GARLAND, TEX. CD 6/18.

Foresight Homes Inc., 4922 Greenvale Ave., Irving, Tex. Purchase and Hire, $353,500. 32 DWELLINGS, IRVING, TEX. CD 6/18.

Len Investment Co. Constr. Div., Mesquite, Tex. Owner builds. $500,000 49 DWELLINGS in Casa View No. 16 subdivision MEQUITE, TEX. CD 6/20.

Southern Engineering & Constr. Co., Box 23, Houston, Tex. LB $107,900. armory-storage PASADENA, TEX. State Bd. Control & Bldg. Engrg. & Mgmnt., Div. c/o Capitol Station, Austin, Tex. Mullen & Powell Insuromedic Bldg. and Daniel C. Herndon, 7507 Lauendale, Houston, Tex. engrs. Bids June 17 CD 4/28.

▲ **Marshall Constr. Co.,** Box 7538, Houston, Tex. CA $1,011,044. Junior HIGH SCHOOL, PASADENA, TEX. Pasadena Ind. School Dist., Pasadena, Tex. Bids June 3 CD 6/25 under LB.

Ray Austin Co., Builders, Richardson, Tex. Force-Account. $365,000. 30 DWELLINGS, RICHARDSON, TEX. CD 6/18.

▲† **Standard Dredging Corp.,** 108 W. 6th St., Los Angeles, Calif. LB $1,038,839 (4 bidders) Mission Bay dredging and revetment, San Diego River and Mission Bay, ENG-04-353-58-29 CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 19. CD 5/13.

▲† **M. H. Golden Constr. Co.,** 3485 Noell St., San Diego, Calif. CA $1,594,000. constr. SCHOOL bldg. and auditorium at Naval Amphibious Base Spec. 7407-56 CORONADO, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids Apr. 10. CD 4/28 under LB.

▲† **Ben C. Gerwick,** 417 Market St., San Francisco, Calif. LB $2,206,160 (4 bidders) transit shed and reconstr. wharf at pier A, berths 1 and 2, Spec. HD 541 LONG BEACH, CALIF. Long Beach Harbor Dpt. 1333 Embarcadero, Long Beach, Calif. Bids June 19 CD 5/29.

▲ **Utah Constr. Co.,** 100 Bush St., San Francisco, Calif. CA $2,596,250. section A, diking dredging and fill at piers "F" and "G" Long Beach Outer Harbor Spec. HD 526 LONG BEACH, CALIF. Long Beach Harbor Dpt., 1333 Embarcadero, P.O. Box 570, Long Beach, Calif. Grand Total $4,838,750, Bids June 12, Awarded June 17 CD 6/16 under LB,
Graham Bros., 5500 N. Peck Rd., El Monte, Calif. CA $2,242,500. section B dikes at piers F&G (Long Beach, Calif.)

▲† **Pacific Bridge Co.,** 256 Montgomery St., San Francisco, Calif. LB $1,152,075 est. $1,098,604 (5 bidders) constr. service club, dining hall and exchange sales store at McClellan Air Force Base, Spec. 2109 ENG-04-167-58-53 SACRAMENTO, CALIF. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids June 20. CD 6/6.

▲† **Peter Kiewit Sons Co.,** 345 Kieways Ave., Arcadia, Calif. LB $5,565,125 (5 bidders) constr. 2nd increment, grading and paving taxiways and runways at Naval Air Craft Facility Spec. 11687-57 SAN CLEMENTE ISLAND, CALIF. Eleventh Naval Dist., 1220 Pacic Hy., San Diego, Calif. Bids June 17 CD 5/21.

▲† **Fred J. Early Co., Inc.,** 22138 S. Vermont Ave., Torrance, Calif. LB $1,525,600 (16 bidders) imprv. fuel storage and distr. sys. at Naval Air Station, North Island, Spec. 10012-57 SAN DIEGO, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego, Calif. Bids June 18, CD 5/21.

▲† **Gordon H. Ball and Harbison & Mahoney,** 300 Camille Ave., Danville, Calif. LB $2,291,030 (4 bidders) est. $2,371,637 base bid. air reserve hangar, operational apron, utilities, heating plant and roads at McClellan Air Force Base, Spec. 2385. ENG-04-167-58-63 SACRAMENTO, CALIF. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids June 24. CD 6/9.
Stolte Inc., 8451 San Leandro St., Oakland, Calif. LB $2,342,788 est. $2,328,083 (4 bidders) alternate bid. (Sacramento, Calif.)

† **Fresno Paving Co.,** 1549 Thesta Ave., Fresno, Calif., LB $109,328 (6 bidders) constr. parking area in several locations (grading, curbs, gutters, bit. topping) Yosemite National Park, Tuolumne Co., CALIFORNIA. National Park Service, Office of Supt., Yosemite National Park, Calif.

HEAVY CONSTRUCTION—LB & CA

▲† **Sheridan Inc.,** 236 North Lake Ave., Pasadena, Calif., CA $4,307,000, 270 units Capehart HOUSING, Mountain Home Air Force Base, MOUNTAIN HOME, IDAHO, Procurement Officer, Mountain Home Air Force Base, Idaho, Bids June 5, CD 6/10 under LB.

▲† **Philip Yousem,** 1500 Lincoln Blvd., Venice, Calif. CA $3,060,000. 200 units Capehart HOUSING Inv. 58-64, Nellis Air Force Base, LAS VEGAS, NEV. Base Procurement Office, Bldg. T-927, Nellis Air Force Base, Las Vegas, Nev. Bids May 29 CD 6/13 under LB.

▲ **Cawdrey-Vemo,** 3601 Fremont Ave., Seattle 3, Wash., CA $1,384,000 (6 bidders) HOSPITAL, ABERDEEN, WASH. Bids June 17. CD 5/27.

Dorland Constr., 1309 Jefferson, Salt Lake City, Utah. CA $598,284, St. Mark's HOSPITAL ADDN., SALT LAKE CITY, UTAH. St. Mark's Hospital, 2nd W. 7th N., Salt Lake City, Utah. Bids May 23, awarded June 15. CD 6/5, under LB.

† **B. D. Bohna & Co., Inc.,** 515 Market St., San Francisco, Calif. CA $574,504, constr. high level RADIOCHEMISTRY FACILITY addn. to an existing radiochemistry bldg., 300 area at Hanford Works, RICHLAND, WASH., Atomic Energy Comm., Hanford Operations Office, Box 550, Richland, Wash. Bids June 12. CD 6/19, under LB.

† **Hoffman Builders,** 64 S. Park, San Francisco, Calif. LB $542,813 (4 bidders) increment No. III Saga Bldg. No. 110 LIVERMORE, CALIF. U. S. Atomic Energy Comm., c/o Dir. 518-17th St., Oakland, Calif. Garretson & Elmendorf, 417 Market St., San Francisco, Calif., engrs.

† **Gresham Constr. Co.,** P.O. Box 300, Santa Clara, Calif., LB $964,100, 48 HOUSING units (Capehart) 2nd increment TRAVIS AIR FORCE BASE, CALIF. Procurement Officer, Travis Air Force Base, Fairfield, Calif. Bids June 12. CD 5/20.

▲† **J. H. Sellen Constr. Co.,** 228 9 Ave. N., Seattle, Wash., LB $1,511,617, est. $1,782,555, (12 bidders), constr. of MISSILE MASTER, at Fort Lawton, Inv. 58-163, SEATTLE, WASH., U.S. Eng., 4735 E. Marginal Way, Seattle 4, Wash., Bids June 17, CD 5/15.

▲ **Andersen—Westfall Co., Inc.,** 3427 N.E. Halsey St., Portland, Ore., CA $2,000,000, FREIGHT STATION, PORTLAND, ORE. Union Pacific R.R. Co., J. A. Bunjer, ch. engr., 1416 Dodge St., Omaha, Neb. Bids June 3, awarded June 18. CD 6/3.

▲ **Allen E. Siegal Enterprises,** 9952 Santa Monica Blvd., Beverly Hills, Calif. Owner Builds. $2,000,000, 5 story, 125,000 sq. ft. Thunderbird HOTEL and restaurant, EL SEGUNDO, CALIF. CD 2/12.

▲ **Bollenbacher & Kelton Inc.,** 5447 El Cajon Blvd., San Diego, Calif. Owner Builds. $2,286,666. 172 stucco and frame DWELLINGS Flying Hills Estates EL CAJON, CALIF.

▲† **Alcan-Pacific Co.,** 1921 Stockton, Sacramento, Calif. LB $1,537,000. (3 bidders) 98 units Capehart family HOUSING FORT BAKER AND FORT BARRY, CALIF. U.S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids June 17 CD 6/12.

▲† **Edward Keeble,** Rte. 4, Box 64, Tully Rd., San Jose, Calif., LB $1,455,411 (4 bidders) aviation facilities (hangar, shops, water, gas, sewers, etc.) ENG-58-352, FORT ORD, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids June 19. CD 5/23.

▲ **Twaits Wittenberg Co.,** 507 S. Bixel, Los Angeles, Calif., CA $3,159,000 constr. road dpt. ADMINISTRATIVE FACILITIES at 1540 Henry St., LOS ANGELES, CALIF. Los Angeles Co. Bd. Supvrs., 501 Hall of Records, Los Angeles, Calif. Bids May 21, awarded June 17. CD 5/23, under LB.

▲† **Theo. G. Meyer & Sons,** 200 Quint St., San Francisco, Calif. LB $1,261,651 (2 bidders) 88 units (7 two story bldgs.) Capehart Family HOUSING incl. utilities, landscaping at Oakland Army Terminal, ENG-58-339 OAKLAND, CALIF. U.S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids June 16 CD 5/27.

CANADA

HEAVY CONSTRUCTION—BA

▲ **Ont., Brampton**—BA 7/21—Ontario Water Resources, Comn., East Block, Parliament Bldgs., Toronto, constr. of an activated sludge sewage treatment plant and installation of trunk sanitary sewers and appurtenances as follows: A, 300 lin. ft. 24-in. sewer, 6,200 lin. ft. 36-in. sewer, and weir chamber; B, 5,100 lin. ft. 42-in. sewer; C, 6,000 lin. ft. 42-in. sewer, $1,040,300, Plans deposit $40 for plant, $30 for sewers, Proctor & Redfern, 75 Eglinton Ave. W. Toronto, engrs., CD 7/26/56.

▲ **Ont., Ottawa**—BA 7/22—Bd. Control, City Hall, filtration plant at Britannia, Ottawa suburb, $4,300,-000, Gore & Storrie Ltd., 1130 Bay St., Toronto, engrs. CD 6/26/56.

BUILDINGS—LB & CA

▲ **Perini Ltd.,** 150 Kent St., Ottawa, Ont., LB $1,349,-500 (25 bidders) central heating plant, Central Experimental Farm, OTTAWA, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Wiggs, Lawton & Walker, 4350 Sherbrooke St. W., Montreal, archts. Wiggs, Walford, Frost & Lindsay, 4350 Sherbrooke St. W., Montreal, engrs. CD 11/1/55.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **Ralph M. Parsons,** 617 S. Olive St., Los Angeles, Calif. U. S. A. CA est. $7,000,000. sulphur recovery PLANT, Kirkuk Oilfields IRAQ. Ministry of Development, Govt. of Iraq, Baghdad. Bids June 25. CD 3/21.

PUERTO RICO

HEAVY CONSTRUCTION—BA

Puerto Rico—BA 8/7—Board of Awards, 1507 Ponce de Leon Ave., Santurce, Puerto Rico, 6.027 Kms., Aguadilla By-pass State Rd. No. 2, Municipality of Aquadilla, Proj. F-2-4 (6). Plans deposit 100. adv. ENR 7/3/58.

Puerto Rico—BA 8/12—Board of Awards, 1507 Ponce de Leon Ave., Santurce, Puerto Rico, North Expressway, State Rd. 26, Municipality of San Juan, Proj. U-26-1 (7) incl. Part 1, embankment with dry or hydraulic fill 0.695 mi. long and drainage structures; Part 2, grading, drainage 0.366 mi. also 18,00M rein.-con. wharf continuous rein-con. overpass and hy. lighting. Plans deposit $80. adv. ENR 7/3/58.

THE NEW ENLARGED REVISED 1958 EDITION

THE ARCHITECT'S ESTIMATOR

AND COST REFERENCE GUIDE

now available

Acclaimed by thousands in the construction industry as the most authentic book of its kind, on preliminary Cost Estimating. The new 1958 edition includes over 500 additional cost items plus a new supplementary section on Foreign Base Construction Cost.
Written by Jacques Ing Cramer Priest, President of Estimators, Ltd., Nationally known firm of Professional Construction Estimators.

ORDER YOUR COPY TODAY
PRICE POSTPAID

$25

Professional Publishing Co., Box 6, Laguna Beach, California

Please send _____ copies, postage prepaid, @ $25.00 ea. of the Architects Estimator & Cost Reference Guide to:
NAME_____
ADDRESS_____
CITY_____ STATE_____
(Please Print or Type)
Inclosed is check for _____ Copies_____ $_____
Inclosed is money order for _____ Copies_____ $_____
Please Send C.O.D. _____ Copies $_____ Postage Collect.

Bridge builders save $1

These twin, continuous deck roadways span 2306' across the Kaw River, on 4310 tons of USS TRI-TEN Steel and structural carbon steel.

ve $100,000 with USS Tri-Ten Steel

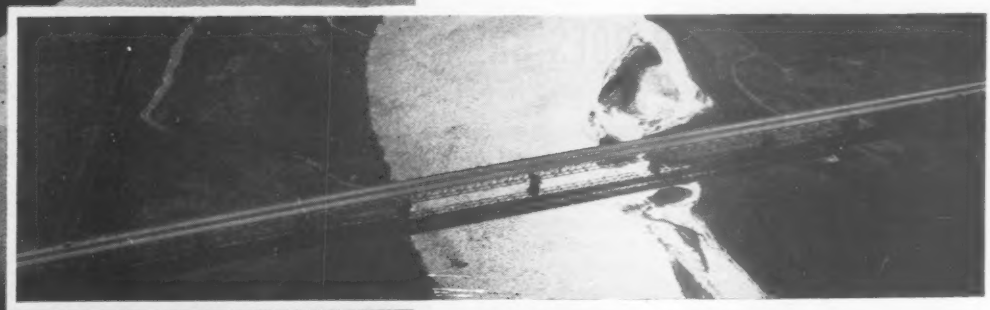
in the Kansas Turnpike's biggest bridge

THIS BRIDGE would have weighed 4,810 tons if it had been built entirely from structural carbon steel. Instead, the designers used USS TRI-TEN Steel for the more heavily stressed chords and diagonals. Because of the stronger steel, these parts could be made thinner, and lighter—*500 tons lighter,* with an estimated saving of *$100,000* in total steel costs.

TRI-TEN Steel members can be made lighter with no loss of strength because TRI-TEN Steel has a much higher yield point than carbon steel—50% higher in thicknesses of ¾" and less—and it meets fully all of the requirements of ASTM Specification A242 for High-Strength Low-Alloy Steels. Because lighter members can be used, dead weight can be reduced as much as 20%, freight costs are lower, and construction is easier.

For more information about construction for maximum strength and minimum weight with USS High Strength Steels—TRI-TEN, COR-TEN, and MAN-TEN—write for a copy of *"Design Manual for High Strength Steels,"* United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

USS, Cor-Ten, Man-Ten and Tri-Ten are registered trademarks



Fisher Memorial Bridge, Lawrence, Kansas
Owner—Kansas Turnpike Authority
Designer—Howard, Needles, Tammen & Bergendoff
Fabricator—Kansas City Structural Steel Co.
Erector—John F. Beasley Construction Co.

United States Steel Corporation – Pittsburgh
American Steel & Wire – Cleveland
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Supply – Steel Service Centers
United States Steel Export Company

USS **United States Steel**

PROPOSED PROJECTS

WATER SUPPLY

▲ **Tex., Dallas**—City, City Hall, east side water pumping station. $1,564,000. Forrest & Cotton, 611 Vaughn Blvd., Dallas, consult. engrs. CD 1/31/56.

Tex., Donna—City, City Hall, voted bonds June 3 water lines, sys. imprvs., $145,000; water storage, $50,000. Zeb Rike, M&J Bldg., McAllen, Tex., consult. engr. CD 5/26.

SEWERS, WASTE DISPOSAL

▲ **Ark., Fayetteville**—City, City Council, voted $1,300,000 bonds, sewer collection system extensions and improvements and sewage treatment plant addition. Marion L. Crist & Associates, 4324 W. Markham St., Little Rock, Ark., consult. engr. CD 5/23/57.

Calif., Oroville—City, c/o Clerk, City Hall, Bond Election July 15 sewerage imprvs. $950,000. CD 9/28/56.

▲ **Minn., Mound**—Village, V. Boxell, mgr., sanitary sewer sys. and disposal plant. $1,310,000. Pfeifer & Shultz, 702 Wesley Temple, Minneapolis, Minn., consult. engrs. CD 2/8/45.

N. J., Wildwood—City, City Hall, incinerator, $500,000. Joseph Michels, Dallastown, Pa., consult. engr. Bids soon. CD 6/18/56.

▲ **N. Y., Buffalo**—Erie Co. Sewer Auth., City Hall, Buffalo sewer collection lines and treatment plant to service Clarence and Amherst areas. $4,250,000. Senior, Bissell and Bronkie, 5757 Main St., Williamsville, N. Y., consult. engrs.

O., Sabina—Village, Village Hall, Sabina, bond election Aug. 23, $200,000; sewerage plant and system, $670,000.

BRIDGES

Miss., Belzoni—Humphreys Co. Bd. Supvrs., Court House, 9 bridges in various parts of county, $600,000. J. B. Williams & Co., Yazoo City, Miss., consult. engr.

AIRPORTS

▲ **Mass., East Boston**—HANGAR, etc.—Northeast Airlines, Inc., Logan Airport, East Boston, plans by Samuel Glaser & Assoc., 234 Clarendon St., Boston, Mass., hangar, etc., Logan Airport. $2,500,000. CD 12/18. Bids July-Aug.

Lima Roadpacker owned by N. H. Garman & Bros., Inc., Reading, Pa. Shown working on highway widening job on U. S. 22, near Harrisburg, Pa. Work involved widening outer strips of 4-lane highway by 33-in. The trench, 9-in. deep, was first lined with a 1½-in. cushion course of screenings. The entire 9-in. lift of 4-in. stone was then tightly keyed in two passes of the Roadpacker. It took only two applications of dry screenings to fill the voids.

"LIMA ROADPACKER DOES GREAT JOB"

says H. S. Garman

"We were looking for a better compactor," says Harold S. Garman of N. H. Garman & Bros., Inc., paving contractors of Reading, Pa., "and we really found it in the Lima Roadpacker. Before we made the purchase, we tried out the other leading makes. The Roadpacker proved to be the fastest machine of the lot, and did a better job of compacting to the state's tough specs. On one job we compacted to 97% of the solid rock weight.

"To get real speed on the job (picture above) we used the widening attachment, which permits two shoes to be hooked up one behind the other. This was very successful and allowed us to finish the operation in record time. Recently, using the complete set of six shoes, we set what we think might be another record when we compacted over 2200 tons of aggregate in an 8-hr. shift. For my money, the Lima Roadpacker does a great job."

Get all the facts on the new Lima Roadpacker—write for free bulletin and see your local distributor

LIMA Construction Equipment Division, Lima, Ohio

BALDWIN · LIMA · HAMILTON

Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

592

PUBLIC BUILDINGS

▲ **Calif., Glendale** — SCHOOLS — Glendale Unif. School Dist., 411 E. Wilson, $11,000,000 voted bonds June 3 schools. CD 4/16.

▲ **Colo., Littleton**—SCHOOL, etc.—School Dist. No. 5, 4801 South Boston, Arapahoe County, Colo., voted $2,000,000 bonds, June 3, addns. to Junior High School and Senior High School. Edwin A. Francis, 218 E. Speer Blvd., Denver, Colo., archt., senior high school. CD 5/20/58.

▲ **Conn., Hartford**—LIBRARY, etc.—State P. Wks. Dpt., 165 Capitol Ave., Hartford, plans by Frederic C. Teich, 252 Asylum St., Hartford, Library and Classroom Bldg. for Hartford Law School, Univ. of Conn. $1,200,000. A. John Macchi, 57 Farmington Ave., Hartford, Conn., consult. engr. Hubbard, Lawless & Blakeley, 110 Whitney Ave., New Haven, Conn., mech. engr. CD 6/12/58.

▲ **Del., Delaware City** — SCHOOL — Gunning Bedford School Dist., St. Georges, Del., plans by Dollar Bonner Blake, 1103 Madison St., Wilmington, Del., Junior-Senior High School, $2,950,000. CD 12/3/57, under St. Georges.

▲ **Mass., Attleboro**—SCHOOL—City, Supt. Schools, Sanford St., plans by Perley F. Gilbert & Assoc., Inc., Sun Bldg., Lowell, Mass., senior high school. $2,225,000. CD 2/20.

▲ **Mo., Kansas City**—SCHOOL—Bd. of Educ., 800 E. 21 St., plans by Keene, Simpson & Murphy, 15 W. 10th St., Kansas City, Mo., Southeast Junior High School. $1,000,000. CD 4/24/58.

▲ **O., Berea**—SCHOOL—Bd. Educ., 390 Fair St., Berea, bond election, Nov. 4, Junior High School, $2,350,000. CD 6/18/58.

▲ **O., Garfield Heights**—SCHOOLS, etc.—Bd. Educ., 4900 Turney Rd., Garfield Heights, bond election Nov. 4, $2,035,000, elementary school and schools addns. CD 4/18/58.

▲ **O., Parma**—SCHOOL—Bd. Educ., 5401 W. 54th St., Parma, high school, $3,000,000. CD 11/9/56.

▲ **Wash., Olympia**—SCHOOL—School Dist. No. 1, plans by Naramore, Bain, Brady & Johanson, 904 7 Ave., Seattle, Zone 1, high school at Gloverfield site. $2,331,269. CD 11/25/57.

COMMERCIAL BUILDINGS

▲ **Ky., Louisville**—HOSPITAL—Sisters of Charity of Nazareth, Louisville, plans by Walter Wagner & Joseph Potts, Fincastle Bldg., 3rd and Broadway, Louisville 2, Ky., 5 story addn. to St. Joseph's Hospital at Preston St. and Eastern Parkway. $2,000,000.

▲ **Mass., Cambridge**—APARTMENT BUILDING—Roger Babson, 370 Washington St., Wellesley, Mass., plans by Hugh Stubbins, 78 Mt. Auburn St., Cambridge, Mass., apartment building. $2,500,000. Fred S. Dubin Associates, 178 S. Whitney St., Hartford, Conn., consult. engrs.

▲ **Mass., Saugus** — SHOPPING CENTER — Milton C. Green and Allen J. Green, 1368 Beacon St., Brookline, Mass., plans by The Architects Collaborative, 96 Mt. Auburn St., Cambridge, Mass., shopping center at Main and Essex Sts., west side of Newburyport Turnpike. $4,000,000.

▲ **N. Y., Buffalo**—SHOPPING CENTER—Buffalo Ventures, Inc., c/o Mrs. Mildred Fedders, 25 E. Quaker Rd., Orchard Park, N. Y., 500,000 sq. ft. shopping center, 4,000 sq. ft. parking area. $5,500,000.

▲ **N. Y., New York**—OFFICE—Syndicate, c/o Harry Horwitz, 565 Fifth Ave., Zone 17, 24 story office at northeast corner of 3 Ave. and 43 St., 681-91 Third Ave., and 203 S.E. 43 St. $6,000,000.

▲ **O., Kettering**—HOUSING—Paul Welch Development Corp., 4701 Mad River Rd., Dayton, O., Homes-Estates Development, 62-acre site Governors Hill, U.S. 25, between Dorothy Lane and Big Hill Rd. $10,000,000.

▲ **Tenn., Memphis**—APARTMENT—G. E. Bass & Co., 2715 N. State St., Jackson, Miss., plans by Richard J. Regan, Falls Bldg., Memphis, 336 unit Negro apartment. $2,300,000.

▲ **Tex., Houston** — MOTOR HOTEL — Flamingo Hotels Chain, 2501 E. Van Buren, Phoenix, Ariz., c/o Michael Robinson, 2nd 200-unit motor hotel, $2,000,000.

INDUSTRIAL BUILDINGS

▲ **Md., Halethorpe**—WAREHOUSE, etc.—Great Atlantic & Pacific Tea Co., 420 Lexington Ave., New York 17, N. Y., warehouse and distribution center on 30-acre tract. $5,000,000.

UNCLASSIFIED

▲ **Calif., Oxnard**—DOCK ADDNS.—Oxnard Harbor Dpt., City Hall, addns. to Dock I, slip 1000 ft. toward the city and widening existing slip 125 ft. to utilize the area from present dock site to Pomona St. $10,000,000. Leeds, Hill & Jewett, 609 S. Grand Ave., Los Angeles, Calif., consult. engrs.

▲ **Texas**—GAS PIPELINE—Gulf Resources, Inc., 20 Broad St., New York, N. Y., 125 gas pipeline and gas gathering system between area of Zapata to area of Cotulla, Tex., in Zapata, Zapata Co., $1,250,000.

▲ **ALBERTA**—PIPE LINE—Peace River Oil Pipe Line Co. Ltd., 320 Seventh Ave. W., Calgary, Alta., 77 mi. oil pipe line into Swan Hills, Virginia Hills Development in northwestern Alberta, Swan Hills, approx. $2,000,000.

Construction Scoreboard

ACTIVITY THIS WEEK

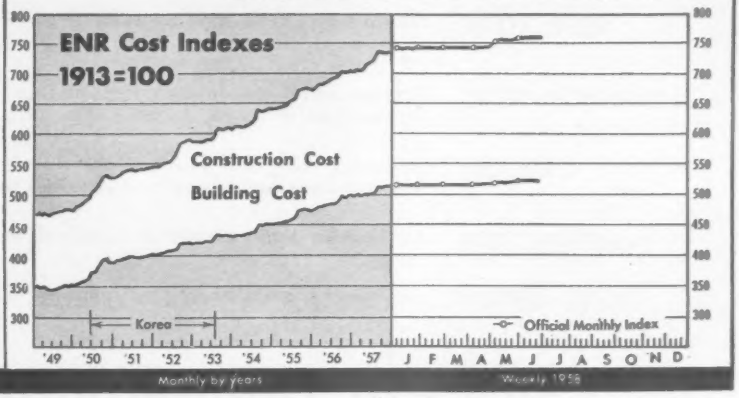
Contract Awards
Millions of Dollars

COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities' average	Week of June 26 1958	% Change from May 29 1958	% Change from June 27 1957
Construction Cost	760.52	+0.4	+5.0
Building Cost	523.82	+0.5	+3.4

Official monthly June Indexes appeared here June 5; official July Indexes will appear here next week.

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 27 wks 1958 millions	Chge '57-'58 %
All Heavy Constr.	$466.3	$10,094.4	+2
Private	103.4	4,275.7	−8
Public	362.9	5,818.7	+10
State & Municipal	192.5	4,191.0	+9
Federal	170.4	1,627.7	+10
By Type of Work			
Public			
Waterworks	1.7	159.1	−22
Sewerage	13.0	317.7	+12
Bridges*	16.4	320.8	−19
Highways	102.1	1,643.4	+5
Earthwork, Waterways	51.7	656.2	+6
Buildings, Excl. Housing	60.2	1,362.6	+17
Housing	65.5	650.9	+69
Unclassified	52.3	716.5	+5
Private			
Mass Housing	44.6	1,966.1	+22
Commercial	27.1	1,037.9	+13
Industrial	22.4	1,009.7	−45
Unclassified	9.3	253.5	−0.4

* Includes private bridges.

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

	Week of June 26	Cum. 26 wks 1958 millions	Chge '57-'58 %
Corporate Securities	$62.7	$2,817.2	−11
State and Municipal:			
All Except Housing	85.7	3,607.1	+28
Housing	...	33.8	−78
Federal Loans	0.9	91.9	−21
Federal Aid	...	....	−100
Total Nonfederal	$149.3	$6,550.0	−20
Federal Appropriations:			
Projects in U. S.	$205.8	$812.4	+254
Outside U. S.	5.3	5.3	−66
Total New Capital	$360.4	$7,367.7	−11

STATE AND MUNICIPAL BOND SALES

	1958 June (millions)	1958 6-Mos. (millions)	Percent Change from 1957 June	Percent Change from 1957 6-Mos.
All Construction	$410.4	$3,641.0	− 10.3	+22.8
Buildings	170.4	1,483.5	− 34.4	− 0.5
Schools	125.8	1,021.0	+ 1.3	− 6.5
Housing	13.5	33.9	− 88.2	−78.3
Other buildings	31.1	428.6	+ 46.1	+76.7
Heavy Construction	240.0	2,157.5	+ 21.4	+46.3
Waterworks	20.6	229.8	− 20.6	+ 1.9
Sewerage	20.3	247.3	− 8.4	+ 4.5
Bridges	0.6	24.0	− 70.0	− 5.8
Highways	111.9	684.3	+199.8	+64.9
Earthwork, dams, waterways	3.1	365.6	+577.0	+4,664.7
Unclassified	83.5	606.5	− 24.0	+ 7.4
Electric and gas utilities	16.5	98.8	− 67.4	−16.8
Airports	3.7	50.4	− 52.3	−34.6
Parking facilities	0.9	13.7	+ 3.7	−31.6
Other	62.4	443.5	+ 23.1	+27.1

CONSTRUCTION MACHINERY PRICE INDEXES

Manufacturer Prices, 1947–49=100—BLS	May 1958	Percent Change from last Month	Percent Change from last Year
All Types	165.5	+0.1	+ 5.0
Cranes, Draglines, Shovels	163.8	+0.1	+ 2.8
Shovel, ¾ cu yd	167.7	+0.2	+ 2.9
Shovel, 1–1½ cu yd	178.4	+0.2	+ 4.6
Shovel, 2–2½ cu yd	154.4	+1.5	+ 7.4
Crane, truck mounted	164.2	+0.6	+ 1.3
Scrapers and Graders	158.8	0	+ 5.8
Scraper, 4 Wheel, 12–15 cu yd	151.3	0	+ 5.1
Grader, heavy duty	164.0	0	+ 5.9
Tractors (non-farm, incl. industrial)	180.5	0	+ 6.6
Wheel-type, off-highway (January 1955=100)	128.4	0	+ 8.3
Crawler type, 80–120 dhp	186.7	0	+ 8.4
Machinery, Tractor Mounted	161.7	0	+ 3.7
Dozer, hydraulic control	177.3	0	+ 3.9
Loader, shovel type	153.9	0	+ 3.2
Specialized Machinery	150.7	0	+ 4.2
Ditcher	154.1	0	+ 1.5
Roller, tandem	193.2	0	+ 6.3
Roller, 3 wheels	161.6	0	+ 4.4
Portable Air Compressors	159.1	0	+ 8.8
Contractor Air Tools	164.5	0	+ 9.7
Mixers, Pavers, Spreaders	149.0	0	+ 4.5
Mixer, truck, 6 cu yd	127.3	0	+ 4.3
Mixer, paving, 34 cu ft	185.2	0	+ 6.3
Bituminous paver	153.0	0	+ 2.1

Five States Ban Discrimination in Private Housing . . .

Here's what the laws cover

NEW YORK	Multiple dwellings, developments of 10 or more adjacent units built, bought or repaired after July 1, 1955 with government-backed financing.
MASSACHUSETTS	Multiple dwellings, developments of 10 or more adjacent units built, bought or repaired after Oct. 1, 1957 with government-backed financing.
OREGON	Buildings with five or more apartments, developments of five or more adjacent units built, bought or repaired with government-backed financing.
WASHINGTON	All housing built, bought or repaired with government-backed financing.
NEW JERSEY	All housing built, bought or repaired with government-backed financing.

Bias Laws Put Homebuilders on Spot

Biggest homebuilder on the spot is William Levitt. He has run full-tilt into a New Jersey state law prohibiting discrimination in the sale of housing. Last week he gained the company of some California homebuilders. A state superior court judge there ruled out racial discrimination in the sale of homes financed with the help of the Federal Housing Administration or the Veterans Administration. This decision is expected to be appealed.

But Mr. Levitt and the California homebuilders are not alone. Four states beside New Jersey have specific laws against discrimination in housing (see above). And proposals for similar laws have been an issue in at least four other states—Ohio, Minnesota, New Mexico and Michigan.

Federal agencies involved in housing now have been drawn into the controversies. The latest case is in New Jersey where Mr. Levitt plans Levittown III, a 15,000-home community. A storm broke around him when he announced he would continue his policy of building "white" communities (ENR June 12, p. 21). The state's Division Against Discrimination started an inquiry that is still in progress, while the state legislature unanimously condemned his stand. And last week Sen. Clifford P. Case of New Jersey demanded that FHA refuse its mortgage insurance commitments to Mr. Levitt unless the builder abandons his "announced" policy of discrimination.

• **FHA stands firm**—However, FHA Commissioner Norman P. Mason said this week FHA will not enforce state laws and therefore cannot take action on grounds of discrimination.

"Our concern is whether Mr. Levitt, or any other builder, is a good risk for mortgage insurance," Commissioner Mason said.

But apparently there are circumstances where FHA can act against a builder. For example, New York's Commission Against Discrimination has obtained FHA agreement to refuse mortgage insurance commitments to builders who fail to comply with a state law banning discrimination because of race, religion, or nationality. The FHA action comes, however, only after the state has completed hearings and ruled against a builder who continues discriminatory practices. New Jersey officials believe they have the same type of arrangement with FHA. Commissioner Mason's position was spelled out last week. Although he has flatly stated the agency will not act to enforce state laws, he warned builders they must obey state and local ordinances. If a builder should ignore the state laws, Mr. Mason said, "We believe we need to take a careful look at his business philosophy . . . we have a warning that perhaps all is not well. Then we have to decide whether he is the sort of builder for whom FHA can safely insure a loan.

• **Complaint filed**—In New Jersey, where Mr. Levitt has received 273 FHA mortgage insurance commitments for his latest venture, a complain has been received by the state. A decision for the complaint will bring a cease and desist order unless Mr. Levitt voluntarily changes his announced stand. State officials say that if he does not change his position after an order is issued, he could be held in contempt.

This is not the first time Mr. Levitt has become entangled in a discrimination controversy. In 1955, a U.S. District Court ruled in his favor when the judge dismissed a suit aimed at compelling sale of a new Levittown, Pa., house to a Negro. In that case, the complainant said the house had an FHA mortgage insurance commitment, therefore his federal rights were violated by the refusal to sell. Interestingly enough, the decision in California last week *upheld* the complainant on exactly that same point: That federal rights are violated when FHA or VA assisted housing is involved.

• **Actively enforced**—In the five states that have anti-discrimination laws there is active enforcement. Massachusetts has had 16 complaints. Six were dismissed and nine were settled by agreement. New Jersey received 12 cases—eight are in progress and one will have a public hearing. In New York 50 cases have been considered. Only one went to court and then the state's law was ruled constitutional.

In Oregon 18 complaints were heard —three were settled by owner action. The others were disqualified.

Connecticut has an anti-discrimination law that covers "publicly-assisted" housing. Its coverage of housing financed through FHA has not yet been tested.

Jet-Propelled Boom for Construction

Outlays of $1.1 billion needed in four years to meet requirements of new, larger aircraft

A billion dollar boom in airport building and modernization lies just ahead for the construction industry. The jet air age is the prime mover. To meet the near-revolution in transport, construction cannot be long delayed.

A new survey of 1,255 airports shows that outlays of $1.1 billion will be required in the next four years for development and improvement. The airport operators—mostly municipalities or municipal agencies—had on hand for the proposed work, or anticipated from local sources $521 million. They also expect to get another $68 million from state sources.

These are the highlights of the joint report by the National Association of State Aviation Officials, the Airport Operators Council and the American Association of Airport Executives.

The apparent deficit—between funds on hand, anticipated and the cost—comes to $477 million.

• **The money source**—Who is going to ante up the $477 million?

The Administration thinks the time has come for the federal government to begin withdrawing from its partnership arrangement in airport development, leaving the financial load to local sources. But, Democrats in Congress disagree (ENR May 29, p. 19).

The Senate, led on this issue by Sen. Mike Monroney, (D., Okla.) has passed a bill that will continue and enrich the existing federal aid to airports program. The current program, under which the federal government supplies 50% of finances for approved projects, expires in 1959. Senator Monroney's bill would raise the current federal ante of $63 million a year to $100 million annually through fiscal 1963. Another $75 million would be added for the new fiscal year that began July 1.

This would adequately cover the deficit with nearly $100 million left over. As of this week, the Senate-passed bill was dormant. It awaits hearings in the House Commerce Committee and no dates have been set. Ultimate House passage is expected. Whether the White House will approve this bill is a question that can be answered only by time. But the airport boom will be a substantial one—with or without big-scale federal aid. That's because modernization generally has lagged behind aviation's growth. The coming of the jet airliner to civil aviation now demands a big program.

• **Construction first in line**—What does this mean to the construction industry? Loads of business, for it will get the lion's share of the money.

The Airport Operators Council, which represents most of the nation's major air terminals, says its 40-odd members alone hope to spend more than a $500 million on capital improvement in the coming four years.

Of this sum, $202 million will go for terminal buildings—both new construction and expansion. Another $35 million or so would go directly into terminal area improvements. This includes loading fingers, concourses, ramps, aprons and utility buildings that are part of the terminal complex. Another $28 million is envisioned for automobile parking, entrance roads and cargo buildings.

If their objectives are attained, these big terminals will spend another $136 million on landing areas, runway construction and extension, installation of lighting systems, new taxiways and turnoffs. More new hangar facilities, will cost $75 million.

Foster V. Jones of Louisville, representing the Airport Operators Council, has told Congress that the $1 billion estimate for the next four years is definitely on the conservative side.

• **Here today, more tomorrow**—The coming of the jet (the Boeing 707 is scheduled to go into service in the fall) is bringing close examination of what a modern airport should be. As aviation has grown, loading fingers have spread out farther and farther from terminals. Dallas, in its plush new terminal at Love Field, has solved the distance problem for passengers by installing moving sidewalks. This is an airport "first." All authorities agree that moving sidewalks will be a standard fixture at big terminals within a few years.

The moving sidewalk is an easy answer to an easy problem. Other big problems remain:

• How best to arrange loading fingers.

• How best to suppress jet noises inside the terminal.

• How best to handle the incoming and outgoing flow of passengers and baggage, which for a single flight will be up to three, four or five times greater than at present.

• How to protect passengers from jet blasts.

• How to handle fueling of jet liners that require more fuel.

But it is on the landing area that "futurism" will make its heaviest initial impact. Today's propeller planes slow to a "walking pace" before turning off the landing strip. Jet aircraft at most big terminals will turn off on high-speed exits—at 60 to 70 mph. High-speed turnoffs are under construction at New York's Idlewild Airport. Washington's new $80 million International Airport, still in the early planning stage, but due for completion by 1961, also will have them. (See p. 54 for changes planned at Chicago's O'Hare Field.)

• **Airplane cloverleaf**—Indeed, the problem of making the best and fastest use of landing space—which costs $1 million or more to build—has left the Airways Modernization Board to consider the possibility of underpasses and cloverleaf systems for airplanes. "The idea of the cloverleaf, as used in automobile traffic, is not foreign to or impossible for, other vehicles," says a board spokesman. The board has done extensive research on the high-speed turnoff, but up to now has no plans for actual testing of the cloverleaf and underpass.

The new Washington Airport to be located 30 miles from the White House at Chantilly, Va., has a chance to be the model for the jet age. A Civil Aeronautics Authority spokesman calls it "the first constructed from scratch as an international jet-age airport." Ammann & Whitney, New York City, holds the prime contract for planning, which just started. Working with Ammann & Whitney are architect Eero Saarinen, who will design the terminal; Burns & McDonnell, Kansas City, Mo., which will design utilities; and Ellery Husted, master planner.

The CAA has advertised for bids on clearing and grubbing at the 8,200 acre site, due to begin around August 1. This agency hopes to get under way with grading by October 1, and will advertise for bids on a grading contract within the next few weeks.

U.S. Construction Abroad Berated

A House government operations subcommittee, continuing its feud with the International Cooperation Administration, last week blasted the agency again.

This time the investigating subcommittee attacked the ICA for its administration of construction projects abroad. Most of them are carried out by U.S. contractors. The lawmakers even went so far as to imply that U.S. foreign aid policy may be failing because of the "inadequate, indifferent and incompetent" administration of aid funds. Spending on construction projects is a big ICA item.

Since July 1, 1954, the committee notes, the ICA has let 10 contracts for construction of highways, dams and industrial plants overseas. The committee said the original estimate of these projects was $138 million. But later estimates now put costs at $160 million to $200 million.

• **Highways a target**—The subcommittee particularly criticized three highway projects in Thailand, Cambodia and Viet Nam. They were described as being inefficiently administered. They also were tagged as projects whose cost estimates have soared. The ICA has replied at great length in the past to the general charges and to others concerning the highway projects.

For instance, in the case of the Thailand highway, the agency said the project received rush priority in 1954 because it provided a strategic link to the Communist-menaced northeast border region. The ICA contends it has regularly tightened up its operations to improve programs. But it also notes that some mistakes can occur, because operating circumstances in underdeveloped countries are far different from the United States.

• **Administrative failures**—The subcommittee listed six areas of deficiency:

• Poor standards and procedures for awarding contracts.

• Incompetence in supervising procurement of construction equipment.

• Inadequate advance planning of projects.

• Indifference to conflict of interests.

• Inadequate coordination between Washington and field missions.

• Relying too much on "political urgency to excuse deviations from sound policy."

The committee charged ICA has not laid down any clear standards for letting contracts. It argued that with better preliminary planning ICA could have used the cheaper bid method for letting contracts instead of relying mainly on cost-plus-fixed-fee contracts.

In addition, it said, ICA officials maintained practically no supervision over engineering and construction projects once they were under way.

Because of these factors, the objectives of the foreign aid program have been impeded, the cost to U.S. taxpayers has been increased, and the dignity and prestige of the U. S. government abroad have suffered, the committee charged.

However, the subcommittee casually noted there were other factors that make it difficult to win friends abroad: Narrow U.S. trade policies, stepped-up counter activities of the Communists, and growing nationalism of former colonial countries.

The committee's report was mainly a rehash of previously voiced charges. The group released its report at a time when Congress was entering the showdown stage in acting on President Eisenhower's $3 billion-plus foreign aid bill. But the report is not expected to affect the bill's final outcome. General feeling in Congress is that with the Russians stepping up their aid activities, this is no time for the United States to cut back.

Oregon Needs $4 Million Highway Matching Funds

To get its full allotment of federal highway money, Oregon will have to boost its motor fuel tax and license fee, Milo K. McIver, chairman of the highway commission, has revealed. The state otherwise will run about $4 million short of the necessary matching funds, he says.

He indicates that he will ask the 1959 legislature to raise the state gasoline tax to seven cents from its present six cents a gallon and to hike the license fee to $5.

Toledo Authority to Start On Port at Presque Isle

First contract has been signed for a port development planned by the Toledo-Lucas County Port Authority. The $1.3 million contract, awarded Price Brothers-McClung, Inc., Dayton, is for first-stage work on a 65 acre site known as Presque Isle.

The contractor will dredge, construct 800 ft of bulkheading, drive steel piling for wharf space, build two connecting dikes, and otherwise prepare about 20 acres for later construction of port facilities. Bids will be taken this June for grading and filling another 10 acres and building an access road. The port eventually will have general cargo facilities, storage sheds, a liquid storage tank farm and an outside bulk storage area. In addition, two grain elevators costing between $3.5 million and $5 million each will be erected by the authority.

The port is in Toledo on the east bank of the Maumee River, one mile upstream of Maumee Bay.

Harbor Headway

Buffalo port improvements proposed by consultant

A long-range master plan to improve Buffalo Harbor was submitted to the Niagara Frontier Port Authority last week by Frederick R. Harris., Inc., New York City consulting firm.

Estimated to cost $18.1 million, the plan calls for exclusive use of the entire outer harbor for industrial expansion and commercial shipping, instead of the south outer harbor as earlier recommended. This means elimination of small boat facilities in the harbor, limiting use of the inner harbor to commercial shipping of under 21 ft draft.

The recommendations are an outgrowth of the Corps of Engineers' plan to relocate the North Harbor entrance channel 1,000 ft south of the present entrance. As now proposed, the harbor area for commercial use would extend from the Coast Guard Base to the Union Ship Canal.

The report advised construction of small boat harbor facilities at Erie Basin, Squaw Island, and on the Niagara River in the area between Austin St. and Hertel Ave.

Other recommendations are to build a bulk terminal at the foot of Tifft St. and general cargo terminals near existing municipal piers.

$500 Million Suburb Planned for Toronto

A city of 50,000 on a site 16 miles from downtown Toronto is envisaged in a long-range development project unveiled recently by Bramalea Consolidated Developments, Ltd. The company expects to spend more than $50 million for land acquisition, installation of utilities and landscaping. The new city will require a total investment of around $500 million, the developers estimate.

Bramalea was founded by Close Brothers, Ltd., London bankers, and Bayton Holdings, Ltd., of Toronto.

Court Action Clears Way For Natural Gas Pipeline

An organization of fuel oil distributors calling itself the Florida Economy Advisory Council finally lost a two-year court battle when the U.S. Supreme Court refused to review a year-old decision of the U.S. Court of Appeals. In that decision, the court had backed up the Federal Power Commission's issuance of a certificate of necessity to construct a $150 million natural gas distributing system in peninsular Florida.

The pipeline will be built jointly by Coastal Transmission Corp. and Houston Gas & Oil Corp. to bring gas to some 80 Florida communities. Over 1,000 miles of main line pipe and 500 miles of lateral pipe will go into the project.

Business Briefs . . .

• **Kaiser Industries expansion**—Permanente Cement Co., an affiliate of Kaiser Industries Corp., has offered to buy the outstanding shares of stock of Olympic Portland Cement Co. The latter is a 64% owned subsidiary of United Molasses Co., Ltd., London. It has 1 million shares of stock outstanding. The firm has a cement plant at Bellingham, Wash., and cement storage facilities at Seattle.

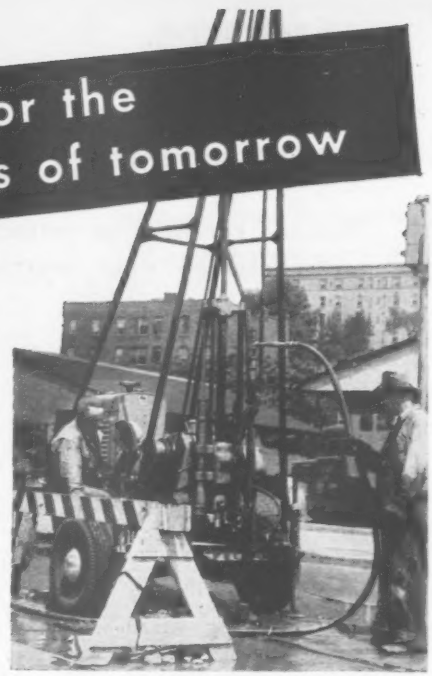
• **Steel fabricator to be bought**—Judson Pacific-Murphy Corp., largest independent structural steel fabricator in the West, will be bought by Yuba Consolidated Industries, Inc. Yuba, a San Francisco firm, has four steel fabricating plants at Richmond and Benicia, Calif., Buffalo, N. Y. and Honesdale, Pa.

• **Easing a burden**—Talman Federal Savings & Loan Association, Chicago, has an "unemployment clause" in its mortgage loan contracts. It will permit a borrower to skip a maximum of six monthly payments of loan principal and interest if he loses his job. Emil J. Seliga, president, says the policy was adopted to encourage prospective home buyers who may be deferring home purchase because of a fear of unemployment.

• **Fluor buys truss manufacturer**—Fluor Corp., Ltd., of Los Angeles, has bought the assets of Summerbell Roof Structures, manufacturer of glued-laminated timber products and wood roof trusses.

• **Cement products firm sold**—Secaur Cement Products Co., Coeur d'Alene, Idaho, has been bought by Central Pre-Mix Concrete Co., Spokane, Wash.

drilling for the highways of tomorrow



When it's better to be safe than sorry, engineers investigate underground conditions. And, that's exactly what this Acker TH drill is doing — drilling test holes over a walled-up section of the old Erie Canal preparatory to building an overhead express highway.

For low-cost, dependable sub-soil information, try an Acker on your next job. Several models available with power and type of mounting to best serve your requirements.

Write today for prices and Bulletin 30. ENR

ACKER DRILL CO., Inc.
725 W. Lackawanna Avenue
Scranton, Penna.

a comlete line of Diamond and Shot Core Drills, Drilling Accessories and Equipment

Only a Jaeger can deliver 600 cfm of air at 1650 rpm

Using the same Model 6-71 GM diesel engine, a Jaeger "600" rotary delivers the same air volume at 1650 rpm that other compressors must speed up to 1800 rpm to produce. You save fuel and wear, with as many as 72,000 *fewer* compressor revolutions, every day you work. • Jaeger 125, 250 and 365 cfm rotaries have this same high efficiency characteristic. Ask your Jaeger distributor to demonstrate—or send for Catalog JCR5.

The Jaeger Machine Company, 200 Dublin Ave., Columbus 16, Ohio

Long-Term Pacts Still Popular

Bulk of recent wage settlements are for two years, with deferred wage increases averaging 13 cents

Despite the recession, long-term labor contracts continue to be popular in the construction industry.

Out of 12 of the most recent settlements, six are for two years, two are for three years and four are for one year. In the two-year contracts, the average wage increase is 15 cents for this year and 13 cents for next year. The annual pay boosts under several of the long-term contracts are payable in two or more installments.

These contracts assure longer labor peace and greater wage stability than one-year contracts do. But they also inject predetermined wage increases into an economically uncertain future. The deferred wage increases—those payable in 1959 and 1960, for example—tend to set a pattern for next year's negotiations and are described by some as a form of "built-in inflation."

• **Biggest settlements**—Largest of the recent settlements—35 cents over a two-year period—was won by plumbers and steamfitters in Columbus, Ohio, and by lathers in Buffalo, N. Y.

The Columbus contract, negotiated by Local 189 and the Mechanical Contractors Association, provides four pay raises—15 cents retroactive to June 1, 5 cents December 1, 10 cents next June 1 and 5 cents the following December.

An identical pattern was accepted by Local 32 of the lathers union in Buffalo. But the contract, however, is unique in two respects.

Instead of the 15 cent pay boost for 1959, the lathers have the option of taking an increase secured under a special formula adopted by several of the local trades. It calls for the computation of the alternative pay boost on June 1, using the cost-of-living index change for one year ending April 1959, and comparing Buffalo wage rates with those in eight other cities.

The new pact also has what is called a "continuous" clause that will keep the contract in effect indefinitely. It will be reopened on wages each June 1, with the other contract provisions being renegotiated only by mutual consent.

• **Other settlements**—Current settlements are shaping up like this in other areas:

Ohio—The Ohio Contractors Association has agreed on one-year contracts with cement finishers and operating engineers. They call for a 12½ cent hourly wage boost. The same amount was granted earlier to teamsters and laborers, and applies to all highway work in the state.

Meanwhile, a strike that began June 2 was settled when the Central Ohio Contractors Association and Local 44 of the asbestos workers union signed a two-year contract for a 32½ cent wage increase. Retroactive to June 1, the contract calls for a 10-cent raise now plus 2½ cents more in welfare, 5 cents December 1, 10 cents next June 1 and 5 cents December 1, 1959.

Delaware—A two-year contract that calls for a 22½ cent wage boost has been signed by painters in Wilmington. Base pay during the second year will be $3.20 an hour.

Union members will receive a 10-cent raise now and another 12½ cents next year. Health and welfare payments, formerly 7½ cents will be increased immediately to 10 cents. The contract also calls for premium pay of 12½ cents an hour for roller painting.

Structural steel painters will get a base rate of $3.25 the first year and $3.37½ the second year. Those doing bridge and tank work at an elevation of over 30 ft will receive $3.32½ the first year and $3.57½ the second year. These compare with normal base rates of $3.07½ and $3.20, respectively.

Michigan—Contractors in the Detroit area have settled with the bricklayers and masons for a 27-cent wage boost spread over two years. Some 5,100 union members will get a 14-cent pay increase now and another 13 cents next May 1.

The contract was agreed to by the Mason Contractors Association, the Detroit Chapter of Associated General Contractors and the Builders Association of Metropolitan Detroit. It provides for 10-cent vacation payment to become part of the base rate, bringing that to $3.77 an hour. Counting fringe benefits, total hourly wage costs to the contractor become $4.06 under the contract.

Earlier, carpenters had settled for two raises of 15 cents each in a two-year contract. The cement masons settled for 25 cents over two years—12 cents this year and 13 cents next year.

Washington—Meanwhile bricklayers and cement finishers in Seattle won pay boosts of 15 cents and 19 cents, respectively.

On July 7, the scale for bricklayers will increase from $3.75 to $3.90, plus 10 cents for health and welfare.

Cement finishers already have moved from $3.04 to $3.23 an hour retroactive to May 1, and will get another 10 cents September 1. An additional boost is due January 1.

New Hampshire—Longer contracts have been won by carpenters in the Manchester-Concord-Nashua area. In each case, the term is for three years.

Manchester-Nashua carpenters have settled for a 27-cent package, 9 cents each year. Their wage scale will climb from $3.00 an hour to $3.27.

Concord carpenters received a 39-cent package—12 cents now, 15 cents next year and 12 cents the third year. The old scale was $2.80.

The settlements, which ended a week-long strike, were negotiated with the Associated Contractors of New Hampshire.

New Jersey—Virtually winding up contract negotiations in New Jersey, except for those with the ironworkers, carpenters in Essex County have settled for 15 cents an hour under a contract that expires next May 31.

• **Strikes**—In the meantime, strikes continue to plague the industry in upstate New York and in Chicago.

The New York problem centers around the ironworkers, who have struck through the Albany-Troy-Schenectady area. It is estimated that $10 million worth of construction work will be halted by this week.

The union is seeking a 35-cent wage boost in a two-year contract, plus 2½ cents more in welfare funds and 2 cents for pensions, according to the Albany Builders Exchange. Contractors have offered 20 cents in a two-year contract.

In Chicago, more than 100 roofing contractors have been struck by members of the roofers union since June 11.

Main stumbling block centers around working conditions sought by the union for men handling hot materials in precarious places. Contractors claim union demands would inflate costs and promote "do-it-yourself" roof repairs.

The union is asking for 10 cents in wages and 10 cents in pensions.

Legal Hiring Hall a Paradox

Labor Relations Board official warns contractors and unions they can expect further refinements in the law

The general counsel of the National Labor Relations Board predicts that the board has not "by any means" uttered the last word on the complex problem of union hiring hall operations in the construction industry.

Speaking before the Labor Law Section of the Wisconsin Bar Association last month, Jerome D. Fenton, the key figure in the threatened application of the Brown-Olds remedy for hiring hall violations, said all the board has done so far is take "another step" in its thinking.

It has tried "to salvage the good and discard the evil of union hiring arrangements", he said, but "will undoubtedly add" to the law on the subject. Until then, the industry must look to what is known as the Mountain Pacific case to light the narrow road of legality in hiring hall operations.

That case marks the board's first attempt to deal with the legality of hiring halls generally. It recognizes the right of unions and contractors to "agree to, and operate under, exclusive hiring arrangements" but requires that hiring halls be operated without discrimination against non-union workers.

The trouble, Mr. Fenton says, is that Congress created a "unique problem and paradox" when it outlawed the closed shop in the Taft-Hartley Act but did not ban the union hiring hall because it serves the "reciprocal needs of the contractor and the worker" in a "mobile" industry characterized by an ever-changing employment relationship. As a practical matter, he observes, it's difficult to separate the two and an exclusive but legal union hiring hall may easily become a closed shop deal.

To guard against this, the NLRB now requires the insertion of three "safeguards" in all hiring hall contracts. As set forth in the Mountain Pacific case, they are:

- Selection of employees on a nondiscriminatory basis unaffected by union membership, by-laws, rules, regulations, constitutional provisions, "or any other aspect or obligation of union membership, policies, or requirements."
- Retention by the employer of the right to reject any job applicant referred by the union.
- The posting in appropriate places of all provisions relating to the hiring arrangement.

The sum of these safeguards is notice to all applicants and employees that one need not be a union member or be subservient to any union to be eligible for a job.

Penalty for violations after September 1 will be the Brown-Olds remedy, which makes the contractor as well as the union liable for all union dues, work permit fees and other assessments collected by the union while an illegal hiring hall is in operation.

The board's present approach to the hiring hall problem, Mr. Fenton says, may not be the best solution or the ultimate answer. But it's an attempt to steer a difficult course between two almost inherently conflicting Congressional mandates and represents the law unless and until it's upset by Congress or the courts, or is changed by the board itself.

Jurisdictional Machinery Proposed by Local Unions

AFL and CIO forces in Toledo, Ohio, have tentatively approved a new procedure for settling local jurisdictional disputes between building trades and industrial unions.

The proposal represents a preliminary step to merger of the Central Labor Union (AFL) and Toledo Industrial Union Council (CIO). It calls for referral of jurisdictional disputes to a 14-man committee, divided equally between AFL and CIO members. The committee can intervene in any local dispute without consulting the parties involved. Decisions of the committee are final and binding unless reversed by the national AFL-CIO on appeal.

Core of the jurisdictional problem, which has frequently threatened to torpedo the AFL-CIO merger, is the protection of work jurisdiction and preservation of job opportunities. The building trades claim a large amount of in-plant construction work within their jurisdiction is being performed by industrial union members who are plant employees. Such use of force account workers vitally affects the interests of contractors.

The Toledo solution appears in the proposed merger constitution of the local labor groups. It was opposed by two building trades representatives on the merger committee.

OFFICIAL PROPOSALS

Bids: July 16, 1958

Interceptor Sewer Construction

June 19, 1958

Sealed proposals will be received by the Board of Contract and Supply at its offices, Municipal Bldg., Binghamton, New York, until 10:30 A.M. Wednesday, July 16, 1958 (EDST) for:

Interceptor Sewer Construction, Contract 11A.

The Contract documents, drawings and specifications may be examined in the office of the City Engineer, City Hall, Binghamton, N. Y. Copies thereof may be obtained from the Dept. of Purchase, 3rd Floor, City Hall, upon payment of a $35.00 deposit. Checks may be made payable to John E. Bloomer, Comptroller. Upon the return of said documents in good condition, within thirty days following the award of this contract, the full $35.00 deposit will be refunded to bidders and $25.00 of the deposit will be refunded to each non bidder.

These proposals must be sealed and marked on the outside to indicate the contents and each shall be accompanied by a Certified Check, bid bond, or New York Draft to the order of John E. Bloomer, Comptroller, or cash in the sum of five per cent (5%) of the total amount of the proposal, which amount will be held by the City without interest as a guarantee that the party or parties whose bid is accepted will enter into a contract and furnish a bond with surety satisfactory to the Mayor in the sum of fifty per cent (50%) of the amount of the contract. This bond must be bought from a local agent.

The Board of Contract and Supply reserves the right to reject any or all bids.

WILLIAM G. EMMONS, Sec'y
Board of Contract & Supply

Prequalification Date: July 10, 1958

Board of Education
Bureau of Construction

NOTICE RE: PREQUALIFICATION FORMS OF CONTRACTORS

NOTICE IS HEREBY GIVEN THAT The Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, N. Y. will receive applications for prequalification from contractors who may wish to submit bids for the proposed hereinafter specified contracts as follows:

General Construction, Plumbing and Drainage, Heating and Ventilating, Electrical Work and Lighting Fixtures for the new Public School 28, Manhattan, St. Nicholas and Amsterdam Avenues, West 155th Street and West 156th Street.

Prequalification application forms will have to be secured from and must be submitted to the Superintendent of School Buildings, Bureau of Construction, 4th Floor, Room 407, 42-15 Crescent Street, Long Island City 1, N. Y.

Bids when advertised, will be received from prequalified bidders only.

Time for submitting prequalification application by contractors will expire on Thursday, July 10, 1958.

City Record—Monday, June 30, 1958

WILLIAM H. CORREALE
Superintendent of School Buildings
Design and Construction
Dated: June 26, 1958

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5067) will be received at Oak View, California until 10 a.m. Pacific Standard Time, July 30, 1958, for furnishing labor and materials for Chlorination Stations, Casitas No. 1, Casitas No. 2, Matilija No. 2, and Rincon, Ventura River Project, California. Location Ventura, California, in Ventura County. Principal items are 5,200 cu. yds. excavation; constructing 4 chlorination buildings; installing chlorination equipment; and other work. Completion time 300 days. For particulars, address Bureau of Reclamation, Oak View, California; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

(Continued from preceding page)

OFFICIAL PROPOSALS

Bids: July 17, 1958.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Public Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., advanced standard time, which is nine-thirty o'clock A. M., eastern standard time, on the 17th day of July 1958, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 353 Broadway, Albany 1, New York						
Albany & Greene (Rte. 9W)	FARC 58-77	Coxsackie–Ravena Pt. 1 & Pt. 2 S.H. 5198–5370 Ravena Greene County Line, S.H. 5652 Proj. No. DF 365(6)	6.93	Asphalt Concrete	$17,000 Plans $2	$319,000
Greene (Rte. 9W)	FARC 58-75	Catskill–West Coxsackie Pt. 1B & Pt. 2, S.H. 8414–8384 Proj. No. DF 558(7)	9.55	Asphalt Concrete	$17,000 Plans $2	319,000
Saratoga (Rte. 9)	RC 58-69	Various Locations on Saratoga–Glens Falls Pt. 3, S.H. 443	....	Roadside Development	$280 Plans $2	5,000
Schenectady, Warren & Washington (Rtes. 150, 8, 7, 147, 418, 313)	RC 58-83	BR. No. 1 S.H. 163; Br. No. 1 S.H. 880; Br. No. 1 S.H. 1338; Br. No. 1 & Br. No. 2 S.H. 1021; Br. No. 1 S.H. 1023 & Br. No. 1 S.H. 8479.	....	Cleaning & Painting 7 Bridges	$1,300 Plans $2	23,000
DISTRICT No. 2, LACY KETCHUM, District Engineer, 100 No. Genesee Street, Utica 1, New York						
Oneida	MTC 58-1P	New York State Thruway–Mohawk Section Subd. 9 (Thruway Connection to Utica North–South Arterial)	1.21 (0.62 Acc.)	9" Cem. Conc. Pavt. Var. Wide	$17,000 Plans $2	302,000
DISTRICT No. 3, EARLE E. TOWLSON, Acting District Engineer, 333 E. Washington St., Syracuse, New York						
Cayuga (Rte. 38)	FARC 58-87	Port Byron–Conquest, S.H. 8087 Proj. No. DF 66(2)	0.35	9" Cem. Conc. Pavt. 22' Wi. Comp. I Beam Br. 92'	$14,000 Plans $2	252,000
Onondaga (Rtes. 5, 11, 298, 31, 48, 174, 370 & 57)	RC 58-88	Various Locations on S.H. 5587, S.H. 8025, S.H. 5470, S.H. 672, S.H. 1039, S.H. 5396, S.H. 132, S.H. 5143, S.H. 5080, S.H. 8496, S.H.9083, S.H. 1040, S.H. 670, and S.H. 5274.	....	Roadside Development	$700 Plans $2 (Prop. Only)	13,000
Onondaga	FIC 58-9 FIRC 58-74	Interstate Route No. 505 (City of Syracuse: Oswego Blvd.); Syracuse Mattydale Fash 54-3 and Phoenix–Syracuse, S.H. 5274 Proj. No. I-1127(4)	2.48 (3.73 Acc.)	Electrical Lighting Facilities	$13,000 Plans $2	226,000
Oswego (Rte. 13)	FARC 58-78	Pulaski–Williamstown Pt. 2, S.H. 972 Proj. No. DF 533(5)	0.67	Asphalt Concrete Ty. 1A	$5,000 Plans $2	91,000
Oswego	FISH 58-26	Interstate Route 505 (Central Square–Parish) Central Square–Constantia, S.H. 1243 C. R. No. 12, 32 and 38. Proj. I-1118(15)	9.01 (4.01 Acc.)	9" Cem. Conc. Pavt. 2 @ 24' Var. Wide = 10.50 Mi. Asph. Conc. Ty. 1A = 1.50 Mi. Bit. Stone Surface Treat. = 1.02 Mi. 4 Hy. Seps. Comp. I Beams 221', 2841', 250.9' and 226.5' 3 R.C. Closed Box Brs. 24', 26', and 26'	$340,000 Plans $50 (Full Size)	6,262,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe (Rte. 33A & 47)	FARC 58-82	Chili Road Pt. 1, S.H. 284; Howard Road, S.H. 9350 Rapids–Rochester, S.H. 401; Proj. No. DU 231(11)	1.19	9" Cem. Conc. Pavt. 2 @ 24' Wide = 0.53 Mi. Asph. Conc. = 0.64 Mi.; Misc. Work = 0.02 Mi. Precast Conc. Beam Bridge 30'	$40,000 Plans $3	748,000
DISTRICT No. 5, E. G. YOUNGMANN, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Cattaraugus (Rtes. 39, 17, 62, 16, 18)	RC 58-89	Various Locations on S.H. 1170, S.H. 730, S.H. 1611, S.H. 1657, S.H. 8160, S.H. 1480, S.H. 990, S.H. 1254, S.H. 5607, S.H. 5608, S.H. 8030, S.H. 5265, S.H. 5259A, S.H. 1269, S.H. 1275, S.H. 1568, S.H. 1569 and S.H. 958.	....	Roadside Development	$700 Plans $2 (Prop. Only)	12,000
Erie	FINTC 58-3 FAC 58-10	Interstate Route No. 506 (New York State Thruway–Niagara Sect.) City of Buffalo: Kensington Expy. Outlet Drain Proj. No. I-865(17); U 377(14)	4.17	9" Cem. Conc. Pavt. Var. Width = 1.10 Mi. Asph. Conc. Ty. 2B = 2.30 Mi. Outlet Drain = 0.28 Mi. Misc. Work = 0.49 Mi. 6 Ramp Structures 256', 568', 1550', 968', 568', 848' Viaduct Alterations	300,000 Plans $20	5,643,000
Erie (Rte. 20)	FARC 58-73	Southwestern Boulevard, S.H. 9269 Proj. No. DF 1079(6)	4.12	Asphalt Concrete	$48,000 Plans $2	857,000
Erie & Niagara (Rte. 18)	RC 58-84	Br. No. 4 Lawton–Gowanda, S.H. 525B Br. No. 3 Youngstown–Olcott, Pt. 2, S.H. 8324A	0.11	Cleaning & Painting 2 Bridges	$1,400 Plans $2	26,000
Erie & Niagara (Rtes. 18, 104, 31, 358, 20A)	RC 58-90	Various Locations on S.H. 1754, S.H. 9052, S.H. 617, S.H. 9105, S.H. 1316, S.H. 5417, S.H. 5416, S.H. 5319, S.H. 5431, S.H. 5563, S.H. 1491A, S.H. 1491, S.H. 529, S.H. 5635 and S.H. 86	....	Roadside Development	$1,000 Plans $2 (Prop. Only)	18,000
DISTRICT No. 6, J. H. THOMAS, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Chemung	FASS 58-4	Breesport C.R. No. 1 Proj. S 4(2)	0.15	Bit. Mac. Ty. 1 Prestressed Conc. Beam Br. 61.3'	$6,000 Plans $10 (Full Size)	111,000
Chemung & Tioga (Rte. 34)	FARC 58-91	Waverly–Lockwood, S.H. 1078, Lockwood–Van Etten Pts. 1 & 2 S.H. 8224 Proj. DF 995(3); DF-102(3)	7.24	Asph. Conc. Comp. I Beam Br. 169.5', Prestressed Conc. Br. 44', Repairs to Two Existing Brs.	110,000 Plans $5	2,107,000
Steuben (Rte. 15)	FARC 58-79	Bath–Avoca, S.H. 5204 Proj. DF-225(12); DF-627(11)	2.28	Asph. Conc. Incl. Repairs to Two Existing Brs.	$20,000 Plans $2	367,000
Schuyler & Steuben (Rte. 226)	FARC 58-76	Savona–Bradford, S.H. 1102 Bradford–Tyrone, S.H. 1420 Proj. S-775(2)	8.79	Asph. Conc. = 0.59 Bit. Mac. Ty. 1 = 8.20 Mi. Comp. I-Beam Br. 45' Widen. Exist. R.C. Slab Bridge 24'	$75,000 Plans $10	1,375,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
Jefferson (Rte. 12E)	FARC 58-71	Cape Vincent–Watertown Pt. 2, S.H. 1164 Proj. DF-565(4)	4.62	Asph. Conc. Ty. 1A = 4.56 Mi. Misc. Work = 0.06 Mile	$43,000 Plans $3	780,000
St. Lawrence (Rte. 37C)	FARC 58-72	Massena–Helena Pt. 2, S.H. 1265 Proj. DS-367(3)	2.40	Asph. Conc. Ty. 1A	$19,000 Plans $3	340,000
St. Lawrence (Rte. 11 & 87)	PSC 8143	Elimination of Grade Crossing of the New York Central Railroad with Richville–DeKalb Junction Pts. 1 & 2 S.H. 8476–9236 (Bairds Crossing)	0.72 (0.17 Acc.)	Asph. Conc. Ty. 1A Hy.–RR Sep. Comp. I-Beam 251'.	$34,000 Plans $3	629,000
St. Lawrence (Rte. 68)	FARC 58-85	Canton–Pierrepont, S.H. 1126 Proj. No. DS-435(1)	1.10	Bit. Mac. Double Surf. Treat. = 1.00 Misc. Work = 0.10 2 R.C. Slab Bridges 30' and 30' 1 I-Beam Bridge 48.2'	$29,000 Plans $3	523,000
DISTRICT No. 8, K. G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Columbia (Rte. 23)	FARC 58-81	Hollowville–Crary ville, S.H. 763; Crary ville–State Line, S.H. 762 Proj. No. DF-564(7)	4.34	Asph. Concrete 4 R.C. Closed Box Brs. 25.1', 47.4'; 38.2' and 21'	$40,000 Plans $3	685,000
Dutchess (Rte. 44)	FARC 58-49	Pleasant Valley–Washington Hollow, S.H. 748 Washington Hollow–Millbrook, S.H. 609 Proj. DF-633(3)	3.70	Asph. Concrete	$22,000 Plans $2	398,000
Putnam (Rte. 6)	FARC 58-80	Brewster–Carmel, S.H. 909 Proj. DF-590(4)	0.56	9" Cem. Conc. Pavt. 21' Wide Repairs to Exist R. R. Gr. Sep. Struct.	$11,000 Plans $2	200,000
DISTRICT No. 9, J. C. FREDERICK, District Engineer, 71 Frederick Street, Binghamton, New York						
Delaware (Rte. 30)	FARC 58-86	Margaretville–Halcottsville, S.H. 5384 Proj. No. DS-459(2)	0.46	Asph. Conc. Ty. 1A Comp. I-Beam Br. 84'	$14,000 Plans $15 (Full Size)	234,000
DISTRICT No. 10, M. E. GOLL, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau	FAC 58-11	Glen Cove Arterial, Cont. 2 (Long Island Railroad to Pratt Boulevard) Proj. No. U-1102(2)	0.59	9" Cem. Conc. Pavt. 2 @ 25' Wide = 0.53 mile Misc. Work = 0.06 mile Hy. Sep. Weld. Plate Girder 175'	$74,000 Plans $5	1,344,000
Queens	FICE 58-1	Int. Rte. Conn. 513 Clearview Expressway (Cont. 1D) Proj. No. I-1112(6)	3.05	Demolition of Buildings	$15,000 Plans $2	266,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

(Continued on the following page)

OFFICIAL PROPOSALS

(Continued from opposite page)

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: July 22, 1958

Contract NYA-650.064

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
CENTRAL TERMINAL AREA
MISCELLANEOUS ALTERATIONS

Sealed proposals for the performance of miscellaneous construction alterations in the Central Terminal Area at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, July 22, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which paymeut is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, July 3, 1958

Bids: July 22, 1958

Power Authority of the State of New York

NIAGARA POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY
OF
15 kv METALCLAD SWITCHGEAR AND APPURTENANCES
FOR NIAGARA SWITCHYARD
SPECIFICATIONS NO. PA-N-25022
NIAGARA CONTRACT NO. NP19

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof f.o.b. Niagara Switchyard Area, University Siding, Niagara Falls, New York, of 15 kv metalclad switchgear and appurtenances for the Niagara Power Project in Lewiston, Niagara County, New York, until 11:30 A.M. Eastern Daylight Saving Time on the 22nd day of July, 1958, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be received for the 15 kv metalclad switchgear, associated equipment and services in accordance with the bidding schedule.

Delivery of the 15 kv metalclad switchgear and appurtenances will be required on or before November 1, 1959.

Plans, Specifications and Proposal Forms fo rthe work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: September 9, 1958

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
For Construction of Tuscarora Power Plant
in Lewiston
Niagara County, New York
Specifications No. PA-N-23007
Niagara Contract No. N10

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of the Tuscarora Power Plant located in Lewiston, Niagara County, New York on September 9, 1958 at 10:30 A.M., E.D.S.T., at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are as follows:

2,715,000 cu. yds.	Excavation, unclassified
28,500 lin. ft.	Drill holes for exploration and grouting
583,800 cu. yds.	Concrete
35,000,000 lbs.	Reinforcing steel
1,283,000 lbs.	Miscellaneous metalwork
1,049,000 lbs.	Erection of structural steel
6,880,000 lbs.	Erection of gates, gate and stop log guides

The work shall be completed on or before December 31, 1962.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at The Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Fifty ($50.00) dollars per initial set of contract documents, and Twenty-Five ($25.00) dollars per set for additional sets, no part of which shall be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum price bid of any bid schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: July 17, 1958.

Erie Canal, Contract M58-8

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Canal Law and Highway Law, sealed proposals will be received, until 10:30 A.M. DST on July 17, 1958 by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract M 58-8 for Cleaning and Painting Guard Gates over the Erie Canal in Herkimer and Oneida Counties, New York Engineer's Estimate for M 58-8 is $42,-000.00

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 14th Floor, The Gov. Alfred E. Smith State Office Bldg., Albany, New York.
(b) Department of Public Works, 270 Broadway, New York City, N. Y.
(c) In addition to the above mentioned offices, plans, maps, and specifications for Contract M 58-8 may be examined and obtained at the office of Mr. Lacy Ketchum, District Engineer, 109 No. Genesee Street, Utica, New York.

The deposit for Plans and Proposal Forms for Contract M 58-8 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Proposals for M 58-8 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" in the amount of $2,-200.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Canal Law and the Highway Law as set forth in "Instructions to Bidders in the contract specifications.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: July 17, 1958

New York State Contract M58-11

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Canal Law and Highway Law, sealed proposals will be received, until 10:30 A.M. DST on July 17, 1958 by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, the Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

Contract M 58-11 for Cleaning and Painting Three Canal Bridges in Monroe County and the Modina Guard Gate, Orleans County, N. Y.
Engineer's Estimate for M 58-11 is $12,-300.00.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 14th Floor, The Gov. Alfred E. Smith State Office Bldg., Albany, New York .
(b) Department of Public Works, 270 Broadway, New York City, N. Y.
(c) In addition to the above mentioned offices, plans, maps and specifications for Contract M 58-11 may be examined and obtained at the office of Mr. B. F. Perry, District Engineer, Barge Canal Terminal, Rochester, New York.

The deposit for Plans and Proposal Forms for Contract M 58-11 is $10.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Proposals for M 58-11 must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Tax ation and Finance" in the amount of $700.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Canal Law and the Highway Law as set forth in "Instructions to Bidders" in the contract specifications.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: July 10, 1958.

Benjamin Franklin Bridge Contract No. 2-A-B

DELAWARE RIVER PORT AUTHORITY
of the
COMMONWEALTH OF PENNSYLVANIA
and the
STATE OF NEW JERSEY
Administration Building
Camden, New Jersey

Sealed bids will be received for repairs to the creosoted fender system at the Philadelphia tower pier of the Benjamin Franklin Bridge, known as Contract No. 2-A-B, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Benjamin Franklin Bridge Plaza, Camden, New Jersey, until 2:30 P.M., Eastern Daylight Saving Time, Thursday, July 10, 1958, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this contract, which may be obtained upon deposit of a $10.00 check, which will be remitted upon receipt of bid or the return in good condition of the copies so taken, within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $2,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialman's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the Work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO
EXECUTIVE DIRECTOR

Bids: July 15, 1958

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
For the Furnishing and Delivery of Unit Control Boards For
Lewiston Power Plant
Niagara Power Project
Specifications No. PA-N-25023
Niagara Contract No. NP18

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof f.o.b. Lewiston Power Plant Area, University Siding, Niagara Falls, New York, of unit control boards for the Lewiston Power Plant in Lewiston, Niagara County, New York, until 10:30 A.M., Eastern Daylight Saving Time on the 15th day of July, 1958, at the Authority's Office, 18th floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be received for thirteen (13) unit control boards and associated equipment in accordance with the bidding schedule.

Delivery of the unit control boards will be required beginning on or before May 1, 1960.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

OFFICIAL PROPOSALS

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than twenty (20) percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

Bids: August 18, 1958

Government of Iraq Development Board & Ministry of Development Construction of Gharraf Control Structures

The Development Board of the Government of Iraq invites Contractors experienced in such work to Tender for construction of the Gharraf Control Structures. The site of the work is located in South Central Iraq on the Gharraf Canal approximately 175 kilometers Southeast of Baghdad.

The work consists of constructing four control structures and navigation locks on the Gharraf Canal. The structures are located approximately 25 kilometers apart; the first one being near the city of Hai.

The regulators are concrete and earth structures with 9 x 5.6 meter radial gates and a navigation lock 64 meters by 8 meters. Quantities are approximately:

	No. 1	No. 2	No 3	No. 4
Earthfill	56,000 cm	65,000 cm	93,000 cm	51,000 cm
Concrete	8,000 cm	8,000 cm	7,700 cm	8,400 cm

A road crosses on each regulator with a vertical lift bridge over the lock. Diversion of a canal flow of up to 400 cumecs will be a major problem.

Full information regarding this tender can be obtained on and after April 21st, 1958, from Embassy of Iraq-Washington.

All Tender Documents are to be submitted in English to the Ministry of Development, on or before 12 noon, local time, on August 18th, 1958.

Minister of Development.

U. S. Government

DEPARTMENT OF HIGHWAYS, MONTPELIER, VERMONT. NOTICE TO CONTRACTORS. Sealed proposals will be received at the State Office Building until 11:00 o'clock A. M. Eastern Daylight Saving Time on Friday, July 11, 1958 for the construction of the following project: BRATTLEBORO I 91-1 (2): In the Town of Brattleboro; on Interstate Road No. 91; the Guilford-Bellows Falls road beginning at a point approximately 7.821 miles north of the Massachusetts-Vermont State Line and extending northerly 3.918 miles. Construction being grading, drainage, sub-base with a bituminous concrete surface course; ten (10) Composite WF Beam Bridges; two (2) bridges each composed of 2 Deck Cantilever truss spans connected with suspended Deck Truss Span with two (2) Composite WF Beam approach spans. Complete information at said office and at the office of R. O. Munn, District Highway Engineer, Brattleboro, Vermont; minimum wage rates predetermined by the Secretary of Labor for the project are set out in the advertised specifications and bid proposal, and such rates are a part of the Contract covering the project in accordance with Section 115 of the Federal-Aid Highway Act of 1956. Minimum truck rates have been predetermined by the department. Contractors bidding on construction involving over $25,000.00 must be prequalified in accordance with Department Regulations. Right is reserved to reject any or all bids and waive any or all technicalities. Plans $25 Certified Check $50,000.

William Poeter
Commissioner of Highways

Montpelier, Vermont
Dated: July 23, 1958

READ THE OFFICIAL PROPOSAL COLUMN OF
ENGINEERING NEWS-RECORD
THIS WEEK AND EVERY WEEK

U. S. Government

D. C. GOVT., DEPT. OF BLDGS. & GROUNDS, D. C., June 13, 1958. SEALED PROPOSALS will be received in Room 404, 499 Pa. Ave. N.W., Wash., D. C., until 2 PM, EDT, July 24, 1958, and then publicly opened and read for construction of Youth Correctional Center Buildings, Underground Utilities and Site Work, near Lorton, Virginia. Proposal forms, plans and specifications obtainable from Supervisor, Bid & Contract Section, Procurement Office, D. C., Rm. 404, 499 Pa. Ave. N.W., upon deposit of a certified check for $200.00 per set, payable to D. C. Treasurer. (phone NA 8-6000, Ext. 2878).

Department of Commerce, Civil Aeronautics Administration. Sealed bids (Invitation No. 9-3034-B1) will be received at Washington, D. C., until 2:00 P. M., July 15, 1958, for clearing, grubbing and demolition in preparation for development of the Washington International Airport in Fairfax and Loudoun Counties, Virginia: approximately 3,900 acres to be fully cleared, including approximately 1,275 wooded acres, within 90 days after Notice to Proceed; partial clearance of approximately 4,300 acres within 150 days after Notice to Proceed; includes removal of approximately 550 buildings, including dwellings, barns, silos, all fences and other types of structures, installations and improvements. For particulars, address Procurement Division, W-160, Civil Aeronautics Administration, T-5 Building, Room 2615, Washington 25, D. C.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal Advertising is $2.40 per line (or fraction) per insertion.

COPY RECEIVED: up to 10:30 A.M. Friday for issue out following Thursday subject to space open for last minute ads.

SEND COPY: to Official Proposal Division, Engineering News-Record, P.O. Box 12, New York 36, New York.

EMPLOYMENT OPPORTUNITIES

NATIONAL COVERAGE

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.
July 24th issue closes July 14th

DISPLAYED RATE:
The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.
An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.
Subject to Agency Commission.

UNDISPLAYED RATE:
$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.
Position Wanted ads take ½ of above rate.
Box Numbers—count as 1 line.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.
Not subject to Agency Commission.

WANTED

Personal experienced in Structural Steel Fabrication.
Must have shop management background and production know-how to qualify for growth situation.
Replies will be held confidential.
Write: **P-8300,** Engineering News-Record Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Have opening for several recent Civil Engineer Graduates with military obligations completed who desire to learn the construction business. Must be ambitious, aggressive, use no intoxicants, preferably single, willing to start in the field on industrial buildings and heavy construction, and willing to move. We operate throughout Kansas and adjacent states. Our organization offers excellent opportunity for advancement. We pay top wages. Martin K. Eby Constr. Co., Inc., P.O. Box 1679, Wichita, Kansas.

Responsible operator builder with many years of field construction experience desires to meet a man experienced in estimating and procurement with some contacts. Salary and participation. Must be able to prove ability. State age, formal education, kind of construction work familiar with, salary expected, percentage of participation desired, and telephone number. Information will be held in strict confidence. P-8190, Engineering News-Record.

Three instructors in civil engineering are needed. Salary (B. S. Degree) $4200 for nine months. Allowed to register for one graduate course. May take more graduate work by teaching ¾ time. May do research, teach, or practice during the summer. Apply direct to Department of Civil Engineering, Mississippi State University, State College, Mississippi.

Superintendent, Incineration Plants, Vicinity of Chester, Pennsylvania. Salary $10,000 to $12,000 per annum. To act as Superintendent and Manager of three incineration plants with a capacity of 600 tons each. Graduate mechanical engineer with several years of administrative and construction experience preferred. Would act temporarily in capacity of resident engineer while plants are under construction. Approximately 35 to 50 years of age; good physical condition. Send full statement of training, experience, and availability to Clarence L. Conner, Administrator, Delaware County Disposal Department, Court House Annex, Media, Pennsylvania.

Bridge Superintendent, experienced in building highway and railroad bridges. Location, Midwest. Salary open as to qualifications. Give full details covering experience, references and personal data. P-8241, Engineering News-Record.

When Answering
BOX NUMBERS...
to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.

The Commonwealth of Pennsylvania Seeks

BRIDGE DESIGNERS

with C.E. degree and 1 to 5 years of bridge experience.

Expanding operations offer permanent positions for
• JUNIOR DESIGNERS • DESIGNERS • ASSISTANT SQUAD LEADERS

Salaries from $5500 to $8200 per year.
Plus Liberal Fringe Benefits
Send Complete resume to
PERSONNEL, PA. HWYS. DEPT., HARRISBURG, PA.

• POSITIONS VACANT

Concrete Superintendent, sober, capable of building highway and railroad culverts, spillways, small dam structures. Location, Midwest, with established contractor. Please furnish complete qualification resume. P-8240, Engineering News-Record.

Highway Engineers—Highway Engineers with a minimum of 3 years experience. Excellent opportunity with established consulting engineering firm in Middle West. P-7909, Engineering News-Record.

Engineer-Superintendent for sewer contractor, capable of figuring, bidding, and constructing to completion sewer and water line projects. Give complete resume and salary desired. P-8347, Engineering News-Record.

Construction Executive. Nationally known construction company seeks topnotch young executives. Opportunities for management of entire division of construction company. Prefers some experience in business management. Individual must be capable of estimating and supervising in fields of highway, heavy and tunnel construction. However, not necessary that his present responsibilities be commensurate with responsibilities of position offered. Ability and youth will be given significant consideration. Both foreign and domestic work. Salary open. Please submit complete personal information and resume of experience. All replies will be held confidential. P-8238, Engineering News-Record.

Engineer-Experienced in Layout & Design of Water & Sewerage:—Chief of Party experienced in Land Surveying of Municipal subdivisions, sewer and water layout. Salary Open. Eastern New York State. P-8292, Engineering News-Record.

Contractor's Engineer, with several years field experience with general contractor on building construction, for well established, dynamic, growing general contractor. College graduate preferred. Above average opportunity for advancement in young-minded organization. This man will be located permanently at our Home Office. Please send resume and identification photo. P-8322, Engineering News-Record.

Associate and Assistant Professors for fields of advanced dynamics, advanced strength, and elasticity. Also have opening for graduate student as half-time instructor. Engineering Mechanics Dept., Kansas University, Lawrence, Kansas.

Design Engineers: Graduate Civil Engineers to do detailed design work involving street paving, storm sewer and sanitary sewer projects. Sanitary Sewer projects to be given major emphasis. Application should be made, giving minmium salary, to Department of Personnel, Springfield, Missouri.

Hydraulic Engineers—Civil Engineer Graduates—All grades, experienced in hydraulic design of channels and bridges, and/or design and construction of dams, for regulatory agency. Duties include review of plans and specifications, report writing, field investigations and inspections, with some travel and public relations. Salary depending on experience. Location—Harrisburg, Pennsylvania.

(Continued on the following page)

CIVIL ENGINEER

Young civil engineer interested in broad application of civil engineering.

Excellent opportunity with consulting firm. Liberal benefit plans and good working conditions. Location Middle West.

Send resume of education and experience with salary requirements to:

P-7577, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

MUNICIPAL ENGINEERING

Graduate Civil Engineer for city of 36,000. $457 to $575 per month. Starting rate commensurate with experience.

Two years engineering college or equivalent experience. $393 to $500 per month. Starting rate commensurate with training and experience.

Both positions under Civil Service with liberal Life and Health Insurance program and retirement system.

Apply to:

A. F. HULTENG
Director of Public Service
P. O. Box 900, Grand Forks, North Dakota

FIELD ENGINEERS, ESTIMATORS IMMEDIATE EMPLOYMENT

Northern New York construction firm offers long range opportunities to civil engineers to age 40 with experience in building construction for positions in estimating or field layout work.

JOHN W. ROUSE CONSTRUCTION CORP.
8 CHURCH ST., GOUVERNEUR, NEW YORK

WANTED
DESIGN ENGINEERS

Expressways, Modern Highways. Min. 5 years experience. Permanent, hosp., vacation, bonus, etc.

MACCABEE, CAMPBELL & ASSOCS.
173 W. Madison St. Chicago 2, Ill.

ENGINEERS

OVERSEAS

20 MONTH CONTRACTS ON MAJOR MULTI-PURPOSE PROJECT IN THAILAND

CHIEF DAM ENGINEER

CONCRETE ENGINEER

Require qualified men with at least ten years' or more responsible construction experience on dams or other mass concrete projects. Degree preferred but not essential. Must pass physical examination and personnel security investigation.

- **EXCELLENT SALARIES**
- **OVERSEAS BONUS**
- **SCHEDULED OVERTIME PAY**
- **COMPLETION BONUS**
- **EXTRA VACATION ALLOWANCE**
- **QUARTERS & SUBSISTENCE**
- **MEDICAL CARE & INSURANCE**
- **FIRST CLASS AIR TRAVEL**

Please write fully including complete salary information to:

Sverdrup & Parcel International
c/o SVERDRUP &. PARCEL, Inc.
915 OLIVE STREET
ST. LOUIS 1, MO.

CIVIL ENGINEERS

Vacancy due to a promotion in Madison, Wis. Graduate engineer with some experience to begin in Engineering Dept. at about $455 a month, **unless** special arrangements can be made for a higher entrance salary due to qualifications. Annual and longevity increases to $572. Office and field work in design and construction of sewer, water, street, sidewalk and curbs. Possession of Engineer-in-Training Certificate required. No residence restrictions for U. S. citizen to begin work. Wisconsin Retirement Fund and Social Security benefits. Personnel Dept., 404 City-County Bldg., Madison 9, Wis.

DESIGNERS and DETAILERS

Experienced in the design or detailing of Erection Methods for Bridges and Structures. Write stating age, education and exper. Engineering office located New York City. Reply:

P-7501, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

ESTIMATORS AND TAKE-OFF MEN

ENGINEERS with Experience in Heavy Construction for Established Concern, Location—New York City—Salary Dependent on Experience and Ability. Send Resume and Salary Requirements to

P-8259, Engineering News-Record
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

ESTIMATOR-ENGINEER

Established heavy construction contractor desires ambitious young civil engineer for Chicago office. Salary and future commensurate with ability. Furnish resume with application.

P-8299, Engineering News-Record
520 N. Michigan Avenue, Chicago 11, Illinois

(Continued from preceding page)

• EMPLOYMENT SERVICE

Salaried Personnel $5,000-$30,000. This nationwide service successful since 1927 finds openings in your field. Sells your abilities; arranges contacts. Present position protected. Write for details—Jira Thayer Jennings, P.O. Box 674, Manchester, Vermont.

• POSITIONS WANTED

Construction Superintendent. General Construction. Twenty-five years experience. References. PW-8169, Engineering News-Record.

Project Manager—P.E. 43, Experienced consulting and construction—bridges, highways, dredging and administration of consultant's office. Speaks Spanish. Desires foreign work with consultant. PW-8237, Engineering News-Record.

Civil-Sanitary Engineer-35-BSCE-MSSE-PE-Spanish descent, now employed, desires to represent Firm or Firms manufacturing Sanitary Engineering equipment which desire sales and/or engineering consultant services for their equipment in the Caribbean and/or Latin America. PW-8243, Engineering News-Record.

Pressure Grouting Engineer; Superintendent. Seven years with international firm on world-famous operations plus equipment, technique improvements. Versatile, original. Best references. Go anywhere. PW-8219, Engineering News-Record.

Experienced Estimator, Project Mgr. and Construction Engineer, Registered Graduate Civil Engineer, Age 35, Available Now! PW-8225, Engineering News-Record.

Equipment Manager of large construction company desires to make change. Many years of construction experience, last few years in the handling of all phases of the construction equipment problem including purchasing, selling, and organization of all maintenance. PW-8315, Engineering News-Record.

Registered B.S.C.E., 36, 10 yrs experience in Mechanical —Struct. design, installation, plant engineering, desires responsible position with engineer, contractor-engineer or multiplant manufacturer-processor. Prefer Great Lakes —Midwest—9600 minimum. Available July 21. PW-8311, Engineering News-Record.

Structural Engineer, Registered, 30 years design, construction, specifications, subways, waterfronts, power plants, industrial, office buildings. PW-8276, Engineering News-Record.

Vice President and General Manager, medium size general contracting firm; Reg. Eng., Bach. Degree Civil Eng., Master's Degree Bus. Adm.; 10 years experience one firm as Field Engineer, Sup't, Estimator and Project Manager, and Partner. Age 35, married, 3 children, Scandinavian. Top references. Competitive and Cost Conscious. Desires aggressive position in expanding firm. PW-8261, Engineering News-Record.

Construction Manager, age 46. Wide experience in general contracting field as superintendent, general superintendent, presently employed, desire change. PW-8321, Engineering News-Record.

• POSITIONS WANTED

Junior Engineer, 32, single, epileptic, BCE (1950 Experience: 4½ yrs. street design and inspection of construction, 2 yrs for gen'l contractor, also surveying drafting, bldg. design. PW-8221, Engineering News-Record.

Concrete Inspector, Canadian, immigrating U.S. early August. 30 years of age, 10 years experience in hydro-electric and heavy industrial concrete inspection. Member A.C.I. and A.S.T.M. Excel reputation, excel references. Thorough experience in all phases of control and construction. PW-8222, Engineering News-Record.

Registered Civil Engineer, familiar with building codes, experienced in school, residential & commercial building design—to provide engineering services for constructors & architects in Beverly Hills, Calif. area. PW-8268, Engineering News-Record.

Civil Engineer; Graduate, 37, married, one child. 12 yrs. diversified exp. in design, planning, estimating, cost, construction, in field & office. Also have Cert. in Bus. Admin. & Finance, exp. in Business & Securities, Principles & Operations. Desire opportunity for responsible position, where my exp. & background will be utilized to a mutual advantage. Top references given; prefer N. Y. area. Min. salary considered $10,000/yr. PW-8095, Engineering News-Record.

Construction Superintendent or manager qualified, 25 yrs. experience. G.M.C. Lucas, 2225 Wisteria, Sarasota, Fla. RI 79843.

Construction Supt. General Construction. PW-8340, Engineering News-Record.

Chief Estimator—Bachelor of Civil Engineering, Masters— Business Administration, Professional Engineers Licenses—New York and New Jersey, 35, complete Estimating and Cost Control functions, preparation of bids, getting and letting sub-contracts. Industrial, Chemical, Refinery. Presently Chief Estimator with world wide Engineering and Construction Company. PW-8338, Engineering News-Record.

Geological and Soils Engineer, 35, BSGE, MSE. 7 years subsurface exploration on Pennsylvania Turnpike using core drills, power augers and electrical restivity Experience at Purdue University, 1 year each: Joint Highway Research Project, Corp of Engineers traffic-ability studies, teaching engineering geology. Also considering university teaching. D. G. Shurig, 212-10 Halsey Drive, West Lafayette, Indiana.

Construction Liaison Engineer. Ten years varied construction experience. BSCE, B SME. P.E. Age 32. Seeks permanent connection with aggressive firm. Salary requirements $9000. PW-8343, Engineering News-Record.

Contractor's Engineer—graduate C.E. licensed. Heavy Construction, Missile Projects, Building. Wide experience in Estimating, Purchasing, Cost Keeping, & negotiations of contracts & extra work, Field Supervision & Project Management. Thorough knowledge & experience in the successful preparation & processing of construction claims on Government & State work. Presently employed by contractor in N. J. & Phila. areas. Available within 2 weeks notice. Willing to prove ability before definite commitment. PW-8349, Engineering News-Record.

SEARCHLIGHT SECTION

(Classified Advertising)

BUSINESS OPPORTUNITIES — EQUIPMENT USED or RESALE

DISPLAYED ——RATES—— *UNDISPLAYED*

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

$2.40 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

Send NEW ADVERTISEMENTS or Inquiries to Class. Adv. Div. of Engineering News-Record, P. O. Box 12, N. Y. July 24th issue closes July 14th

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• CONTRACT WORK WANTED

Licensed Surveying personnel, or crews available on contract basis, any location. CWW-8339, Engineering News-Record.

WANTED

Anything within reason that is wanted in the field served by Engineering News-Record can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-third year.
Write today without obligation
WILSON *Engineering Corp.*
College Home Office: HARVARD SQ., CAMBRIDGE, MASS

WANTED

15 TON CABLEWAY CARRIAGE

Please state price, condition, and location

HARDAWAY CONTRACTING COMPANY
P. O. Box 1360 Columbus, Georgia

USED
SAFETY NETS & SPIDER STAGING

2—Model ST-18 spider staging units, electrically powered, with 1 adjustable 20 to 25 ft. platform, including all miscellaneous accessories.

10 sections—Safety nets, 40' x 55', mesh rope, ½" diameter, frame rope ¾", with mesh openings of 4" x 4".

10 sections—No. 8 olive drab duck, 40' x 55', used as a liner for the above nets.

Write - Wire - Phone

W. N. CHILL

"AUTOMATIC" SPRINKLER CORP. OF AMERICA
Youngstown, Ohio Phone Riverside 6-6561

FOR SALE
CONSTRUCTION EQUIPMENT
send inquiries

WALSH-PERINI-MORRISON-KIEWIT-UTAH COMPANIES
Long Sault Dam Project
P.O. Box 106—Rockwell 92456—Massena, New York

RAILS-TIES
TRACK ACCESSORIES
NEW and RELAYING

"FASTER FROM FOSTER" RAIL
& ALL TRACK EQUIPMENT
Nation's Largest Warehouse Stocks

L. B. FOSTER CO.
PITTSBURGH 30 • ATLANTA 8 • NEW YORK 7
CHICAGO 4 • HOUSTON 2 • LOS ANGELES 5

RAILS
MIDWEST STEEL CORP.
502 DRYDEN STREET
CHARLESTON, W.VA.

PIPE
Surplus New & Used
FOR SALE

ALBERT
PIPE SUPPLY CO., INC.

PILING • PIPE • CULVERTS • VALVES & FITTINGS

ASBESTOS CEMENT PIPE • ALUMINUM PIPE

103 VARICK AVE., BROOKLYN, N. Y. • HY 7-4900

ASSOCIATED PIPE & FITTING CO.

PILING PIPE SHELLS MANDREL FITTINGS	K & M ASBESTOS CEMENT PIPE	CULVERTS CIRCLE ARCH SECTIONAL

P. O. BOX 67, CEDAR GROVE, N. J. • CE 9-4800

FOR SALE—FOR RENT
OR
RENTAL with OPTION to PURCHASE

20—ALLIS CHALMERS DOZERS AND PUSHERS MODELS HD-20H AND HD-15AC ALL WITH TORQUE CONVERTORS
34T LIMA TRUCK CRANES
703 AND 703SC LIMA CRANE BACKHOE COMBINATIONS
1201 AND 1601 LIMA SHOVEL, DRAG COMBINATIONS
S-18 AND 23TDT EUCLID MOTOR SCRAPERS
23TDT—119W EUCLID BOTTOM DUMPS
63FDT EUCLID 22 TON REAR DUMPS
10BV EUCLID LOADER
AC AD-40 AND ADAMS 660 GRADERS
BROS 50 TON COMPACTORS
JACKSON MULTIPLE COMPACTORS
600CFM AND 900CFM CHICAGO PNEUMATIC COMPRESSORS
GARDNER DENVER AIR TRACS WITH 4½" DRIFTERS
DW-21 CATERPILLAR WITH C&D MOVALL DUCK BODIES AND/OR 470 SCRAPER BOWLS
ONE COMPLETE CONCRETE SPREAD — AVAILABLE AUGUST 15—SEPTEMBER 1
PILE HAMMERS
MISCELLANEOUS SMALL TOOLS i.e.: PUMPS, VIBRATORS, FORM TAMPERS, ETC.

THE UNION BUILDING & EQUIPMENT CO.
315 Howe Avenue, Passaic, New Jersey
TELEPHONE: PRescott 7-1200

SHOVELS - DRAGS CRANES DRILLS - EUCLIDS

631 Page Elec. Drag, 200', 8 yd.
9-W Bucyrus Erie Elec. Drag, 200', 8 yd.
9-W Bucyrus Erie Diesel Drag, 175', 13 yd.
625 Page Diesel Drag, 150', 10 yd.
723 Page Diesel Drag, 130', 10 yd.
621-S Page Diesel Drag, 125', 7 yd.
200-W Bucyrus Erie Diesel Drag, 125', 6 yd.
7-W Bucyrus Erie Diesel Drag, 180', 5 yd.
5-W Bucyrus Erie Diesel Drag, 120', 6 yd.
2400 Lima Dragline, 130', 5 yd.
4500 Manitowoc Dragline, 120', 5 yd.
111-M Marion Dragline, 100', 4 yd.
3500 Manitowoc Dragline, 80', 2½ yd.
170-B Bucyrus Erie 6½ yd. Elec. Shovel
150-B Bucyrus Erie 6 yd. Elec. Shovel
4500 Manitowoc 5 yd. H. L. Shovel
120-B Bucyrus Erie 4 yd. Elec. Shovel
1400 P&H 4 yd. Electric Shovel
1055 P&H 3½ yd. Standard Shovel
80-D Northwest 2½ yd. Standard Shovel
Unit 1020 ¾ yard Shovel
Smaller Shovels & Draglines available
Model T-750 Reich Heavy Truck Mounted Rotary & Down-the-Hole Drill
Euclid Trucks - Models 86FD, 27FD, 5FD, 2FD, 63TD, 36TD, 31TD, 25FTD, 38FDT, 67FDT
Truck Cranes - Lima, Bay City, P&H, Link Belt Dozers, Scrapers, Front End Loaders
Shovel, Dragline, Backhoe Attachments
Buckets and Dippers

Frank Swabb Equipment Co., Inc.
313 Hazleton Nat'l. Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

PILING
SURPLUS NEW and USED For Sale, Wanted or Rent

H & STEEL SHEET PILING

3700 PCS. BETH. SP6, A65' 50' 56' & 48' & 40'
264 PCS. MP112—40' & 60'
447 PCS. BETH.—AP3—25 & 30, 40 & 60 FT.
416 PCS. BETH.—DP2—31' 40' 50' & 64'
536 PCS. BETH. ZP32—25' 36' 48' 55' & 62'
1500 PCS. BP112—BP114—55'-60'
112 PCS. 8', 300 PCS. 15' Corrugated
PILING BOUGHT—SOLD—RENTED
STOCKS: N. Y.—BOSTON—BUFFALO
MONTREAL—BALTIMORE—JACKSONVILLE
VANCOUVER—NEW ORLEANS
INGER, RAND AIR COMPRESSORS
1—3876FT. 700 H.P. & 2—3078FT. 500 HP. PRE2
1—1578FT. 250 HP. XVH. 2 1055FT. 175 HP XRE2. 4—723' Joy WN102
4—GANTRY WHIRLEY CRANES
25 R-Amer. 75' Gantry 165' Boom
20 R-Amer. 60' Gantry 139' Boom
R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.
Telephone Mu 2-3075

When you need
PILING . . . fast

use this section, as many contractors do, as a piling buying directory. It can save you time when you want to know, quickly, where to buy good new or used piling.

We do a Nation-wide business in
STEEL SHEET PILING

IMMEDIATE SHIPMENT
815 pcs. 75 to 30 ft. Beth. SP-6a—New York
100 pcs. 62 ft. Beth. ZP-32—Connecticut
322 pcs. 60 to 30 ft. M-115 and M-116—Illinois
258 pcs. 50 ft. ZP-32—Maryland
241 pcs. 48 ft. MZ-27—Louisiana
76 pcs. 30 to 28 ft. M-112—Florida
67 pcs. 30 to 20 ft. M-116—Wyoming

Other Lengths & Sections at Various Locations, including Storage Yards at CHICAGO & BUFFALO

PILE DRIVING EQUIPMENT

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Hoists and Boilers

MISSISSIPPI VALLEY EQUIPMENT CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

STEEL SHEET PILING—*FOR SALE AND RENT*

3000 pcs. Beth SP-6a 40' to 56'—practically new
Attractively priced—prompt shipment from New York State

WHISLER STEEL PILING CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo.
CHestnut 1-4474

a joint venture of

CONMACO, INC.
820 Kansas Ave.
Kansas City 5, Kans.
DRexel 1-3930

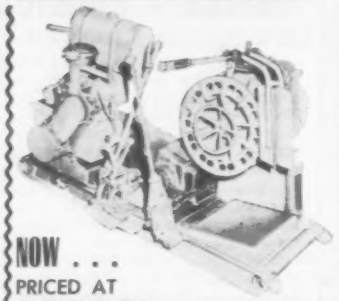
R. C. STANHOPE, INC
60 East 42nd St.
New York 17, N. Y.
Murray Hill 2-3075

Phone or write any of the above

SAVE . . . $1000

on this Surplus New

PORTABLE POWER WINCH!



NOW . . .

PRICED AT

$490.00 LESS 5% IF CHECK ACCOMPANIES ORDER

This PORTABLE POWER WINCH . . . with 11.1 H.P. genuine Waukesha 2 cylinder 4 cycle gasoline motor . . . pulls 3000 or more pounds 50 feet per minute, or 1500 pounds at 100 feet per minute or other combinations. Engine develops enough power for 3000-6000 pound load. Drum will handle 400 feet of 3/8" cable or equivalent amounts of other sizes. Gov't. surplus, never used. This offer is truly a bargain!

WARRANTY

We Guarantee these Waukesha Powered Winches to be exactly as advertised and described, never used. In original 1" lumber crates. Our record of fair dealing dating back to 1902 assures you of prompt shipment and good machinery.

Southwestern Stamp Works "Since 1902"

SOUTHWESTERN STAMP WORKS

● ESTABLISHED 1902 ●

1713-35 W. Grand • Oklahoma City, Okla.

● REgent 6-3621 ●

ALL SIZES NEW • USED

HY DRACHMAN STEEL CORP.

STRUCTURAL STEEL

IMMEDIATE DELIVERY FROM STOCK

SPECIALIZING IN PILE SECTIONS • H BEAMS • WF BEAMS

The Contractors Steel Supply House

52-25 2nd Street, Long Island City, New York • RAvenswood 9-1262

STEEL IS OUR BUSINESS

PILE DRIVING EQUIPMENT

VULCAN AND McKIERNAN-TERRY Steam Pile Hammers and Extractors

• DROP HAMMERS • DRIVING CAPS • HOISTS AND BOILERS
• STEEL LEADS • PILE DRIVER HOSE • STEEL SHEET PILING

CONMACO, INC.

DRexel 1-3930
820A KANSAS AVE.,
KANSAS CITY, KANS.

1958 CAT DW21

With 470 Scraper &
Super Charged Diesel Engine, 29.5—29 22-Ply Tubeless Hard Rock Lug Tires
(New Machine Guarantee)

HODGE & HAMMOND, INC.
720 Garrison Ave. New York 59, N. Y.
N. Y. Phone: Kilpatrick 2-2400
N. J. Phone: Market 3-5424

FOR SALE

1—Mod. 120-B Bucyrus Erie Comb. Shovel and Dragline. Electric. Has 5 cu. yd. and 6 cu. yd. Shovel Buckets and 100' Drag. Boom.
Price, f.o.b. Cars, Dallesport, Wash. $80,000.00

1—Mod. 80-D Northwest Dragline powered by Murphy Diesel Engine, 60' Drag. Boom.
Price, f.o.b. Cars, Long Beach, Calif. $23,500.00

GUY F. ATKINSON COMPANY

10 W. Orange Avenue So. San Francisco, Calif.

Phone: PLaza 6-0300

MODERN TRUCK CRANES

Link Belt Speeder—Model HC-70, 1951, 20 ton capacity, 80' Pin connected Folding Boom.
Price $16,500.00

Bucyrus-Erie — Model 22-B, like new. 80' Pin connected Folding Boom.
Price $18,500.00

P & H Model 150, 60' Boom 20' Jib.
Price $10,500.00

Also several late Model Crawler Cranes, Shovels and Backhoes

United

CRANE and SHOVEL SERVICE CO.
Incorporated
MICHIGAN AVENUE, KENILWORTH, N. J.
Phone CHestnut 5-6260

RENTAL and SALE of

PILE HAMMERS & ACCESSORIES

Steam, Gasoline and Diesel Cranes
Steam Generators—Compressors
Pile Extractors

Distributors for Vulcan Iron Works, Inc.

HOWARD W. READ CORP.
4603 N. 4th St., Phila., Pa.
Tel. GLadstone 7-0700

WANTED

Three 4—6 C.Y. Diesel Shovels
Not over 4 years old and in good operating condition

A S WIKSTROM INC
SKANEATELES, N Y

FOR SALE

Excellent used REX Model 200 DOUBLE PUMPCRETE

Waukesha engine drive, overhead platform and controls with pugmill remixer and Wisconsin engine drive, skid mounted, selective transmission with large quantity Model 80 pipeline. This machine used one job only. Excellent condition. Original cost $36,000.00. Selling price f.o.b. Kansas City . . . $22,500.00. Contact:

THE G. W. VAN KEPPEL COMPANY
2461 Pennway Kansas City 8, Missouri
Phone GRand 1-1540

SEARCHLIGHT Equipment Spotting Service

This service is aimed at helping you, the reader of "SEARCHLIGHT", to locate Surplus new and used Engineering and Construction equipment *not currently advertised.* (This service is for USER-BUYERS only). No charge or obligation.
How to use: Check the dealer ads to see if what you want is not *currently* advertised. If not, send us the specifications of the equipment wanted on the coupon below, or on your own company letterhead to:

Searchlight Equipment Spotting Service
c/o ENGINEERING NEWS-RECORD
330 W. 42nd St., N. N. 36, N. Y.

Your requirements will be brought promptly to the attention of the equipment dealers advertising in this section. You will receive replies directly from them.

Searchlight Equipment Spotting Service
c/o ENGINEERING NEWS-RECORD
330 W. 42nd St., N. Y. 36, N. Y.
Please help us locate the following equipment components.

. . . . . .
. . . . . .
. . . . . .

NAME . . . . . .
TITLE . . . . . .
COMPANY . . . . . .
STREET . . . . . .
CITY 7/3/58

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names — Additional cards on following pages

NEW ENGLAND

Goodkind & O'Dea

Consulting Engineers

Design and Supervision
Foundations, Structures, Highways
1214 Dixwell Ave. Hamden, Conn.
610 Bloomfield Ave., Bloomfield, N. J.
325 Spring Street, New York 7, N. Y.
7956 Oakton St. Chicago 31, Ill.

The Clarkeson Engineering Co., Inc.

Engineers and Consultants

Bridges and Highways
Expressways
Investigations and Reports
Supervision of Construction
Traffic and Parking Studies
Waterfront Facilities

285 Columbus Avenue, Boston 16, Mass.
Suite 200, 2000 P St. NW, Wash. 6, D.C.

Fay, Spofford & Thorndike, Inc.

Engineers

Airports, Bridges, Highways
Water Supply, Sewerage and Drainage
Port and Terminal Works
Industrial Bldgs.
Incinerators and Power Plants

Designs — Investigations
Supervision of Construction

Boston, Massachusetts

Jackson & Moreland, Inc.

Engineers and Consultants

Design and Supervision of Construction

Reports — Examinations — Appraisals

Machine Design—Technical Publications
Boston — New York

Chas. T. Main, Inc.

Engineers

Design and Supervision of Construction for Industrial Plants—Electrical, Steam and Hydraulic Engineering—Investigations, Reports, and Appraisals.
Boston, Mass. — Charlotte, N. C.

Metcalf & Eddy

ENGINEERS

Investigations — Reports — Design
Supervision of Construction and Operation
Management — Valuation — Laboratory
1300 Statler Building, Boston 16

Moore Survey & Mapping Corp

Engineers — Surveyors

Aerial surveys, Ground surveys, Geodetic Control, Hydrographic surveys, Construction surveys, Tax Maps.
11 Maple Ave. Shrewsbury, Mass.

MIDDLE ATLANTIC

Ewin Engineering Corporation

Designers of Port Facilities, Foundations, Industrial Plants, Bridges, Highways, Sewage Disposal and Municipal Projects.

1367 Connecticut Avenue N.W.
Washington, D. C.

DuPont Plaza Center, Miami 32, Fla.
150 Savannah St. Mobile, Ala.

Consult these Specialists

Let them save your time by bringing their broad experience in their specialty to bear on your problems.

Airways Engineering Corp.

Airports, highways, dams, fuel storage, pipe lines, aerial topographic mapping.
1212 - 18th St., N.W.,
Washington 6, D. C.
Phone: REpublic 7-8131

Green Associates, Inc.

Consulting Engineers

Civil, Mechanical, Electrical

220 E Pleasant St., Baltimore, Md.
Pittsburgh, Pa. Boston, Mass.

Penniman & Browne, Inc.

Engineering Division

Soils Engineering—Test Borings Load Testing—Asphalt & Concrete Design—Field and Plant Control Steel Inspection—Mobile X-Ray
6252 Falls Rd. Baltimore 9, Md.
VAlley 5-6511

Whitman, Requardt & Associates

Engineers—Consultants

Civil—Sanitary—Structural
Mechanical—Electrical
Reports, Plans, Supervision, Appraisals
1304 St. Paul St., Baltimore 2, Md.

Maddox and Hopkins

Engineers and Surveyors

Plane and Geodetic Surveys
Topographic Maps — Photogrammetry
Highways, Utilities, Structures
8506 Dixon Ave., Silver Spring, Md.

Greer Engineering Associates

Soils Engineers

Site Investigations; Foundation Analyses for Buildings, Bridges, Airports, Highways, Earth Dams, Pavements; Field Inspection; Laboratory and Field Testing for all types of Earth work.
98 Greenwood Avenue Montclair, N. J.

Louis Berger & Associates

Consulting Engineers
Studies, Design and Supervision
Highways—Structures
Airfields—Foundations
177 Oakwood Avenue Orange, N. J.
2nd & Locust Streets Harrisburg, Pa.
Baltimore, Maryland

Joseph S. Ward

Consulting Soil and Foundation Engineer

Site Investigation, Laboratory Soil Testing, Foundation Analysis, Highways, Airports, Engineering Reports and Consultation.
91 Roseland Ave. Caldwell, N. J.

Edwards and Kelcey

Engineers and Consultants

Highways—Structures
Traffic—Parking
Terminal Facilities

3 William St., Newark, New Jersey
Boston — New York — Baghdad

Porter, Urquhart, McCreary & O'Brien

O. J. Porter & Co.
CONSULTING ENGINEERS

Airports — Highways — Expressways — Buildings — Bridges — Dams — Harbors — Foundations — Stabilization — Pavements
Reports, Designs & Supervision

415 Frelinghuysen Ave., Newark 5, N.J.
4201 Sunset Blvd. Los Angeles 29, Cal.
1421 - 47th Avenue Sacramento 22 Cal.
1140 Howard Street,
San Francisco 3, Cal.

Boswell Engineering Co.

Consulting Engineers

Highways, Airports, Municipal

Ridgefield Park, New Jersey
Salt Lake City, Utah

F. E. Harley and Associates

Harley Building
260 Godwin Avenue, Wyckoff, N. J.
Highways, Parkways, Water Supply
Municipal Engineering
Survey, Plans, Supervision

B. K. Hough

Consulting Engineer
Soils & Foundation Engineering

Site investigations, soil testing, design analysis for earthworks, foundations and pavements, field inspection, engineering reports, consultation.
121 E. Seneca St. Ithaca, New York

Ammann & Whitney

Consulting Engineers

Design and Supervision of Construction of Bridges, Highways, Expressways, Buildings, Special Structures, Airport Facilities.
111 Eighth Ave., New York 11, N. Y.
Milwaukee — Washington — Philadelphia

Barker & Wheeler

Water Supply — Utility and Industrial
Sewerage — Valuations
Sewage Disposal — Reports
Power Systems

New York City, 11 Park Place
Albany, N. Y., 36 State St.

Barstow, Mulligan & Vollmer

Engineers

Surveys, Design & Construction Supervision, Highways, Expressways, Parks
Movable and long-span bridges
Prestressed Structures — City-Planning and Municipal Engineering
49 W. 45 St. New York 36, N. Y.

Bogert and Childs

Consulting Engineers

Clinton L. Bogert — Fred S. Childs
Ivan L. Bogert — Donald M. Ditmars
Robert A. Lincoln — Charles A. Manganaro
William Martin
Water & Sewage Works — Refuse Disposal
Drainage — Flood Control
Highways & Bridges — Airfields
145 E. 32nd St. New York 16, N. Y.

Bowe, Albertson & Associates

Engineers

Sewage and Water Works — Industrial Wastes — Refuse Disposal — Municipal Projects — Industrial Buildings — Reports — Plans — Specifications — Supervision of Construction and Operation — Valuations — Laboratory Service
75 West Street New York 6, New York

Brown & Blauvelt

CONSULTING ENGINEERS

Expressways, Highways, Parkways, Airports, Railroads, Bridges, Dams, Water Supply, Sewage Disposal, Industrial Plants, City Planning, Traffic and Transportation Studies

Reports, Design and Supervision

468 Fourth Ave., New York 16, N. Y.

Buck, Seifert and Jost

Consulting Engineers

Water Supply — Sewerage — Hydraulic Developments—Reports and Valuations, Chemical and Biological Laboratories.
New York City, 112 E. 19th St.

Ebasco Services Incorporated

ENGINEERS
CONSTRUCTORS
BUSINESS CONSULTANTS
Design and Construction
Financial and Operating Consultation
Investigations and Reports
Consulting Engineering
Appraisal
Two Rector Street New York 6, N. Y.
209 S. LaSalle Street Chic. 4, Ill.
204 Southland Life Bldg.
Dallas 1, Texas
611 Equitable Bldg. Portland 4, Ore.
120 Montgomery Street
San Francisco 4, Cal.
1625 Eye Street, N.W. Wash. 4, D. C.

Freyssinet Company, Inc.

ENGINEERS

Structural Design • Supervision
Reports • Bridges • Buildings
Waterfront Structures

62 William Street
New York, N. Y.

GIBBS & HILL, INC.

Consulting Engineers
Water & Waste Treatment Works—Roads, Bridges & Railroads—Conventional & Nuclear Power Generation—Electric Transmission & Distribution Systems—Industrial & Communication Facilities.
Los Angeles N.Y. 1, N.Y. Tampa

Hardesty & Hanover

Consulting Engineers

Bridges
Long Spans of All Types
Movable—Lift, Bascule and Swing
Hanover Skew Bascule
Steel and Concrete Spans
Grade Crossing Eliminations

Expressways and Thruways
Other Structures
Foundations
Supervision, Reports, Appraisals

101 Park Avenue, New York 17, N. Y.

Frederic R. Harris, Inc.

CONSULTING ENGINEERS

Reports • Feasibility Studies • Evaluations • Designs • Port Development
Foundations • Highways and Bridges
Shipyards • Marine Structures • Floating Dry Docks • Graving Docks • Bulkheads • Piers • Wharves • Power Plants • Industrial Buildings

27 William Street, New York 5, N. Y.
1915 Tulane Avenue, New Orleans, La.

Hazen and Sawyer

Engineers

Richard Hazen — Alfred W. Sawyer
H. E. Hudson, Jr.
Water and Sewage Works
Industrial Waste Disposal
Drainage and Flood Control
122 East 42nd St. 3333 Book Bldg.
New York 17, N. Y. Detroit 26, Mich.

Howard, Needles, Tammen & Bergendoff

Consulting Engineers
Bridges, Structures, Foundations, Express Highways
Administrative Services
1805 Grand Ave., 99 Church St.
Kansas City 8, Mo., New York 7, N. Y.

Hunting Technical Services

Aerial photography, topo mapping, photogeology, soil studies, geophysics for engineering, mineral and oil projects in USA and overseas.
57 Park Ave., New York 16, N. Y.
790 King Ave., Columbus 12, Ohio
London — Baghdad — Caracas
Johannesburg — Sydney — Toronto

King & Gavaris

CONSULTING ENGINEERS

Bridges, Highways, Tunnels
Waterfront Structures, Reports
Investigations, Foundations
Design & Supervision of Construction

425 Lexington Ave., New York 17, N.Y.

Moran, Proctor Mueser & Rutledge

Consulting Engineers

Foundations for Buildings, Bridges and Dams; Tunnels, Bulkheads, Marine Structures; Soil Studies and Tests; Reports, design and supervision.

415 Madison Ave., New York 17, N.Y.
Eldorado 5-4800

When you need a SPECIALIST in a hurry . . .

Engineering News-Record's Professional Service Section offers the quickest, most direct method of contacting consultants who may be available NOW.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names

Additional cards on preceding and following pages

Parsons, Brinkerhoff, Hall & Macdonald

ENGINEERS

Bridges, Highways, Tunnels, Airports, Subways, Harbor Works, Dams, Canals, Traffic Parking and Transportation Reports, Power, Industrial Buildings, Housing, Sewerage and Water Supply.

165 Broadway, New York 6, N. Y.

E. Lionel Pavlo

Consulting Engineer

Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports

642 Fifth Ave. New York 19, N. Y.

Malcolm Pirnie Engineers

Malcolm Pirnie Ernest W. Whitlock
Robert D. Mitchell Carl A. Arenander
Malcolm Pirnie, Jr.

MUNICIPAL & INDUSTRIAL
Water Supply - Water Treatment
Sewage and Waste Treatment
Drainage - Sewerage - Refuse Disposal

25 West 43rd St., New York 36, N. Y.

The Pitometer Associates

Engineers

Water Waste Surveys
Trunk Main Surveys
Water Distribution Studies
Water Measurements & Special
Hydraulic Investigations
New York, 50 Church St.

Alexander Potter Associates

Consulting Engineers

Water Works, Sewerage, Industrial Waste, Hydraulic Works, Reports, Designs, Appraisals.

50 Church St., New York, N. Y.

Clyde Potts Assoc.

Weston Gavett - Stanley N. Williams
Consulting Sanitary Engineers
Sewerage and Sewage Disposal
Water Works and Water Supply
Valuations and Appraisals

262 Park Ave., Plainfield, New Jersey

Praeger-Kavanagh

Engineers

126 East 38th St., New York 16, N. Y.

Sanderson & Porter Engineers

Design
Construction

New York New York

Scheidenhelm, F. W.

Consulting Engineer

Hydraulic Engineering; Hydro-electric Development; Water Supply; Flood Control; Engineering Problems relating to Water Rights and Water Power Law; Appraisals. 50 Church Street, New York 7, N. Y.

Seelye Stevenson Value & Knecht

Consulting Engineers

Richard E. Dougherty, Consultant

Airports, Highways, Bridges, Dams, Water Supply, Sanitation, Railroads, Piers, Industrial Plants, Reinforced Concrete, Steel, Industrial Waste Disposal, Foundations, Soil Studies, Real Estate Development
Civil — Mechanical — Electrical

101 Park Avenue New York 17, N. Y.

Severud-Elstad-Krueger-Associates

Consulting Engineers

Structural Design - Supervision
Reports - Buildings - Airports
Special Structures

415 Lexington Ave., New York 17, N.Y.

Singstad & Baillie

Consulting Engineers

Ole Singstad David G. Baille, Jr.
Tunnels, Subways, Highways
Foundations, Parking Garages

24 State St. New York 4, N. Y.

Frederick Snare Corporation

Engineers—Contractors

Harbor Works, Bridges, Power Plants, Dams, Docks and Terminals.

Difficult and Unusual Foundations A Specialty.

233 Broadway, New York City 7

Havana, Cuba Lima, Peru
Bogota, Columbia, Caracas, Venezuela

D. B. Steinman

Consulting Engineer

BRIDGES
HIGHWAYS

Design, Construction
Strengthening, Investigations,
Reports, Advisory Service

117 Liberty St., New York 6, N. Y.

Henry W. Taylor

Consulting Engineer

Water Supply, Sewerage
Refuse Disposal, Incineration
Industrial Developments

151 W. Merrick Rd., Freeport, N. Y.

Tippetts-Abbett-McCarthy-Stratton

Engineers

Ports, Harbors, Flood Control, Power Dams, Bridges, Tunnels, Highways, Subways, Airports, Traffic Foundations, Water Supply, Sewerage, Reports, Design, Supervision, Consultation.

62 West 47th Street, New York City

The J. G. White Engineering Corp.

Design — Construction
Reports — Appraisals

80 Broad Street, New York

Keis & Holroyd

Consulting Engineers

Formerly Solomon & Keis
Since 1906
Water Supply, Sewage Disposal, Garbage & Refuse Incineration, Industrial buildings.
Troy, N. Y.

Gannett Fleming Corddry & Carpenter, Inc.

ENGINEERS

Dams, Water Works, Sewage, Industrial Wastes & Garbage Disposal, Highways, Bridges & Airports
Traffic & Parking — Appraisals, Investigations & Reports.

Harrisburg, Penna.

Branch Offices
Pittsburgh, Pa. Philadelphia, Pa.
Daytona Beach, Fla.

Capitol Engineering Corporation

Engineers—Constructors—Management

Bridges Dams
Planning Airports
Sewage Systems Water Works
Design and Surveys Roads & Streets
Executive Offices, Dillsburg, Penna.

Robert W. Lowry, Inc.

Consulting Engineers

Robert W. Lowry M. M. Lepkaluk
Design, Supervision, Reports, Long Span & Movable Bridges, Expressways, Highways, Airports, Prestress Design, Strengthening, Soil Engineering.
227 Pine St., Harrisburg, Pa.
New York-New Orleans-Detroit-Boston

Modjeski and Masters

Consulting Engineers

Bridges and other Structures
Foundations
Highway and Expressways

State Street Bldg., Harrisburg, Pa.
Philadelphia - Miami - New Orleans

Aero Service Corporation

Aerial topographic maps — photo-maps for engineering projects anywhere in the world—highways, railroads, cities, power and pipe lines, mining development. Soil studies and electronic surveys of large areas; resources inventories.

210 E. Courtland Philadelphia 20

Albright & Friel Inc.

Consulting Engineers

Water, Sewage, Industrial Wastes and Incineration Problems, City Planning Highways, Bridges and Airports, Dams, Flood Control, Industrial Buildings. Investigations, Reports, Appraisals and Rates

3 Penn Center Plaza Phila. 2, Pa.

Lawrence T. Beck and Associates

ENGINEERS AND CONSULTANTS

Philadelphia New York Washington

Fridy, Gauker, Truscott & Fridy, Inc.

Architects & Engineers

Water, Sewer, Waste Disposal, Roads, Airports, Power & Lighting, Petroleum Facilities, Hospitals, Schools, Public & Industrial Buildings, Reports, Plans, Supervision, Appraisals.

1321 Arch St. Philadelphia 7, Pa.

Justin & Courtney

Consulting Engineers

Joel B. Justin - Neville C. Courtney
Dams and Power Problems, Hydroelectric, River Basin Developments, Water Supply, Foundations.

121 South Broad Street
Philadelphia 7, Pa.

Yule, Sticklen, Jordan & McNee

ENGINEERS

Bridges, Highways, Airports
Design, Investigations, Reports
Supervision of Construction
Civil, Structural Mechanical & Electrical

Cedar Cliff Drive
Camp Hill, Pa.

1225 Vine Street
Philadelphia 7, Pa.

5564 North High Street
Columbus, Ohio

Hunting, Larsen & Dunnells,

Engineers

Industrial Plants — Warehouses, Office and Commercial Buildings, Steel and Reinforced Concrete. Design and Supervision, Reports.

1150 Century Bldg., Pittsburgh, Pa.

Morris Knowles Inc.

Engineers

Water Supply and Purification Sewerage and Sewage Disposal, Valuations, Laboratory, City Planning.

Pittsburgh, Pa.

Peter F. Loftus Corporation

Design and Consulting Engineers

Electrical • Mechanical • Structural
Civil • Nuclear • Architectural
First National Building
Pittsburgh 22, Pennsylvania

Pennsylvania Drilling Company

Subsurface Explorations, Grouting, Industrial Water Supply, Mineral Prospecting.
Large Diameter Drilled Shafts, Reports

1295 Chartiers Ave. Pittsburgh 20, Pa.

Sanders & Thomas, Inc.

Consulting & Contracting Engineers

Civil Structural Sanitary
Mechanical Electrical
Reports Plans, Supervision
Construction

POTTSTOWN, PA. Reading, Pa
Philadelphia, Pa. Washington, D. C

Michael Baker, Jr., Inc.

Consulting Engineers, Civil Engineers, Planners & Surveyors; Airports & Highway Design; Water Works & Sewerage Design & Operation; Aerial Topo Maps; Surveys; Reports & Investigations; Irrigation, Home Off.—Rochester, Pa. Br. Off.: Jackson Miss.; Harrisburg, Pa.; College Park, Md

Sprague & Herrwood, Inc.

Drilling Services

Foundation Investigations, Soil Testing & Test Borings, Grout Hole Drilling & Pressure Grouting, Diamond Core Drilling

Main Office

221 W. Olive Street, Scranton, Pa

Branches:

1009 Western Savings Fund Bldg., Philadelphia, Pa
11 W. 42nd St., New York, New York
200 Magee Bldg., Pittsburgh, Pa
573 Linwood Ave., N. E. Atlanta, Ga.
Box 1446—Grand Junction Colorado
Buchans, Newfoundland

Frank D. McEnteer's Associates, Inc.

Consulting Engineers

Bridges, Highways, Industrial Plants
Design, Investigations, Surveys
Terminal Building, Clarksburg, W. Va.

SOUTH

Harry Hendon and Associates

ENGINEERS
(Formerly Polk, Powell and Hendon)

Harry H. Hendon L. E. Hoffman
A. B. Jowers
Civil Engineers—Public Utilities
10 Office Park Circle, Mountain Brook
Birmingham 9, Alabama

Palmer and Baker Engineers, Inc.

Consulting Engineers - Architects

Surveys-Reports-Design-Supervision
Consulation

Transportation and Traffic Problems
Tunnels-Bridges-Highways-Airports
Industrial Buildings
Waterfront and Harbor Structures
Graving and Floating Dry Docks
Complete Soils, Materials and Chemical Laboratories

Mobile, Ala. New Orleans, La.
Washington, D. C.

Dignum and Associates

Consulting Engineers

Civil Electrical
Structural Mechanical

260 Palermo Avenue
Coral Gables 34, Florida

Rader and Associates

Engineers - Architects

Sewage Disposal, Water Works, Ports, Airports, Bridges, Highways, Office and Commercial Buildings, Industrial Plants, Reports, Investigations, Consultations, Aerial Photography, Photogrammetry.
111 N.E. 2nd Avenue, Miami 32, Fla.

Law-Barrow-Agee Laboratories

Soils Engineers & Consultants

Soil Testing — Soil Boring — Rock Drilling—Load Testing—Field Control —Engineering Studies—Chemical Analysis —Physical Testing
Box 1558 Atlanta 1 Ga.
Serving the entire South

CHECK

this section whenever you need professional advice.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names — Additional cards on preceding and following pages

Patchen and Zimmerman Engineers

Bridges, Expressways, Dams, Hydro and Steam Power, Chemical, Process and Industrial Plants, Water Supply and Sewage Treatment, Investigations, Reports, Design, Supervision.
Augusta, Georgia — Atlanta, Georgia

J. Stephen Watkins

Consulting Engineers

Highways—Bridges—Sewerage
Water Supply—Industrial Plants
446 E. High St., Lexington, Kentucky
5402 Preston Highway, Louisville, Ky.
533 N. Clippert St. Lansing, Michigan
107 Hale St., Charleston, W. Va.

Engineers Testing Laboratory, Inc.

Soil Mechanics and Foundation Engineering

Soil Borings — Laboratory Tests
Foundation Analysis — Reports
2116 Canada Dry St. Houston 23, Texas
737 Main St., Baton Rouge, Louisiana

Eustis Engineering Company

FOUNDATION AND SOIL MECHANICS INVESTIGATIONS

Soil Borings — *Laboratory Test*
Foundation Analyses — *Reports*

3635 Airline Highway
Metairie, Louisiana

Southern Mapping & Engineering Company

Planners and Surveyors:
Airports, Highway, Water, Sewage, Topography, Reports, Investigations, Pipe Line Surveys, Acquisition of Right-of-way.
216 Commerce Pl., Greensboro, N. C.

Schmidt Engineering Co. Inc.

Consulting Engineer

Investigations, Reports, Designs, Supervision Heavy Construction—Dams and Hydroelectric Projects—Foundation Explorations and Treatment—Water and Sewerage Works—Bridges & Highways
Emerson Building Chattanooga, Tenn.

MIDDLE WEST

Alvord, Burdick & Howson

CONSULTING ENGINEERS

Water Works — Sewerage
Water Purification — Sewage Treatment
Flood Relief — Power Generation
Drainage — Appraisals

20 North Wacker Drive, Chicago

A. J. Boynton & Co.

ENGINEERS

Fixed and Movable Bridges
Structures
Foundations
Design
Construction

111 N. Wabash Ave., Chicago 2

Consoer, Townsend & Associates

Water Supply, Sewerage, Flood Control & Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas & Electric Transmission Lines.
360 East Grand Ave., Chicago 11, Ill.

THIS SECTION
is available to consulting engineers to contact prospective clients every week or every other week.

Ralph H. Burke, Inc.

CONSULTING ENGINEERS

Complete Architectural and Engineering Services
Plans, Supervision, and Reports

Expressways - Grade Separations
Traffic Studies - Parking Structures
Underground Garages - Shore Protection
Parks - Field Houses - Municipal Works
Airports and Air Terminal Buildings

20 North Wacker Drive, Chicago 6, Ill.

De Leuw, Cather & Company

CONSULTING ENGINEERS

Public Transit — Subways
Traffic & Parking — Railroad Facilities
Expressways — Industrial Plants
Grade Separations — Municipal Works
Urban Renewal — Port Development

150 North Wacker Drive, Chicago 6
San Francisco Toronto Oklahoma City

Roy B. Everson

S.E. Consultant Since 1900

For Purification Systems as applied to Sewage Treatment, Water Works and Swimming Pool Circulating Systems. A New System for Automatic Control
211 W. Huron St. Chicago 10, Ill.
Phone SUperior 7-3339

Greeley and Hansen

Engineers

Water Supply, Water Purification
Sewerage, Sewage Treatment
Flood Control, Drainage, Refuse Disposal
220 S. State Street, Chicago 4

Harza Engineering Co.

Consulting Engineers

Calvin V. Davis — E. Montford Fucik
Richard D. Harza

Hydroelectric Plants & Dams
Transmission Lines
Flood Control, Irrigation
River Basin Development

100 West Madison Street — Chicago 6

Hazelet & Erdal

CONSULTING ENGINEERS

Fixed & Movable Bridges, Expressways, Industrial Plants, Airports, Dams.
Monadnock Block, Chicago 4, Ill.
Dixie Terminal Bldg., Cincinnati 2, O.
Commerce Bldg., Louisville 2, Ky.
Oding Bldg., Lansing 33, Mich.

Pioneer Service & Engineering Co.

Consulting and Design Engineers
Operations - - - Purchasing
Steam - - Hydraulic - Gas
Public Utilities - - Industrials
231 So. La Salle St. — Chicago 4

Sargent & Lundy

ENGINEERS

Steam and Electric Plants
Utilities—Industrials
Studies—Reports—Design
Supervision
Chicago

Suhr, Peterson, Peterson & Suhr

Consulting Engineers

REPORTS—PLANS—SUPERVISION
Sewerage, Water Supply, Flood Control & Drainage, Airports, Roads, Surveys, Fixed & Movable Bridges
130 N. Wells St.. Chicago 6, 11

Mobile Drilling & Engineering Inc.

Foundation Engineering & Testing Division—Contract Drilling Division

Foundation Investigation, Analysis & Design—Earth Dam & Embankment Design—Pavement Design—Compaction Control—Soil Sampling & Testing—Core Drilling.
960 N. Penn. Ave., Indianapolis 4, Ind.

Chas. W. Cole & Son

Engineers - Architects

Sewerage, Water Supply, Bridges, Highways, Toll Roads, Industrial, Municipal and Commercial Buildings
220 W. LaSalle Ave., Central 4-0127
South Bend, Indiana

The Hinchman Corporation

Consulting Engineers

World Wide Activities
CORROSION CONTROL
Surveys - Designs - Specifications
Francis Palms Building
Detroit 1, Michigan

The H. C. Nutting Company

Testing Engineers—Inspection Service
Foundation Investigation—Test Borings
Soil Mechanics—Sewage Flows
Construction Control—Concrete
Water Waste Survey
4120 Airport Road Cincinnati 26, O.

Vogt, Ivers, Seaman & Assoc.

Engineers-Architects

Highways — Structures — Expressways
Industrial Bldgs. — Harbor Facilities
Airports — Dams — Docks
Surveys — Reports
34 W. Sixth St., Cincinnati 2, O.
20 N. Wacker Dr., Chicago 6, Ill.

The Austin Company

Design and Construction
Manufacturing and Process Plants
Newspaper and Broadcasting Bldgs.
Power Plants—Industrial & Institutional
Industrial Office Buildings and Laboratories
Merchandising Bldgs. & Facilities
Plant Location Surveys

New York — CLEVELAND — Los Angeles
Chicago — Houston — Oakland
Detroit — Seattle

Havens and Emerson

W. L. Havens — A. A. Burger
J. W. Avery — H. H. Moseley
F. S. Palocsay — E. S. Ordway
F. C. Tolles, Consultant
Water, Sewerage, Garbage, Industrial Wastes, Valuations—Laboratories
Leader Bldg. — Woolworth Bldg.
Cleveland 14 — New York 7

The Osborn Engineering Co.

DESIGNING-CONSULTING

Industrial Plants — Office Buildings
Stadiums — Grand Stands — Field Houses
Bridges — Garages — Laboratories
7016 Euclid Ave. — Cleveland 3, Ohio

Photronix, Inc.

offering an integrated process of
AERIAL PHOTOGRAMMETRY
AND
ELECTRONIC COMPUTATION
For Engineers, By Engineers
790 King Ave. — Columbus 12, Ohio

Jones, Henry & Williams

Consulting Sanitary Engineers

Water works, Sewerage & Treatment
Waste Disposal
Security Building — Toledo 4, Ohio

Toledo Testing Laboratory

Engineers—Chemists

Concrete—Soils—Asphalt
Inspection — Research
Tests — Development
Foundation Investigation
Borings—Diamond Drilling
Load Tests
Soils Mechanics Laboratory
1810 North 12th St. — Toledo 2, Ohio

Gaartz, Meiling & Assoc.

"Engineering Aids to Consultants"
Surveyors — Engineers

Higher Order Surveys & Computations; Expressway, Highway, Canal, Gas Line, Hydrographic & Topographic Surveys; Photogrametric & Geological Control Surveys; Wilderness & Arctic Surveys.
724 E. Mason St., Milwaukee 2, Wisc.

WEST OF MISSISSIPPI

Heron Engineering Co.

Consulting Engineers

For all types of Aerial Tramways, Cableways, and Suspended Structures
2000 South Acoma St.
Denver 19, Colorado

Stanley Engineering Company

Consulting Engineers

Hershey Building — 208 S. LaSalle St.
Muscatine Ia. — Chicago 4, Ill.

Black & Veatch

Consulting Engineers

Water - Electricity - Sewage - Industry Reports, Design, Supervision of Construction, Investigations, Valuation and Rates.
1500 Meadow Lake Parkway
Kansas City 14, Missouri

Burns & McDonnell

Engineers—Architects—Consultants

Kansas City, Missouri — Phone
P. O. Box 7088 — DElmar 3-4375

Russell and Axon

Consulting Engineers

Civil — Sanitary — Structural
Industrial — Electrical
Rate Investigations
408 Olive St. — St. Louis 2, Mo.
Municipal Airport, Daytona Beach, Fla.

Sverdrup & Parcel, Inc.

Engineers—Architects

Bridges, Structures and Reports, Industrial and Power Plant Engineering
915 Olive St., St. Louis 1, Mo.
417 Montgomery St., San Francisco, Calif.

Wenzel & Company

Consulting Engineers

Developing The Great Northwest
Great Falls, Montana

Benham Engineering Company

Established in 1909
Design and Consulting Engineers

215 N E 23rd Street
Oklahoma City 5, Oklahoma

Spencer J. Buchanan and Associates, Inc.

Consulting Engineers

Soil Mechanics and Foundation Engineering, Civil Engineering Services, Reports, Design and Field Supervision.
310 Varisco Building, Bryan, Texas
TAylor 2-3767

Soil Mechanics Incorporated

Foundation Exploration and Testing Services

Site Investigations, Soil Borings, Field and Lab Testing, Load Tests, Reports
11525 S Main St., Houston 25, Texas
MOhawk 7-1869
310 Varisco Building, Bryan, Texas
TAylor 2-3767

CHECK
this section whenever you need professional advice.

PROFESSIONAL SERVICES

Cards arranged by areas, states, cities, names

Additional cards on preceding pages

Lockwood, Andrews & Newnam
Consulting Engineers
Navigation Facilities — Public Works Airports — Earthworks — Roads, Structural, Mechanical — Electrical Reports — Design — Supervision Surveys — Valuations
Corpus Christi—Houston—Victoria, Texas

McClelland Engineers, Inc.
Soil & Foundation Consultants
Investigations—Reports—Supervision Borings & Tests
2649 N. Main Houston 9, Texas

National Soil Services
Soil & Foundation Consultants
Borings—Tests
Investigations—Reports—Supervision
Main Office:
4002 Gulf St. Houston 17, Texas
Branches: St. Louis, Mo.
Mexico D. F. Veracruz, Tampico

FAR WEST

Woodward-Clyde-Sherard & Assoc.
Consulting Civil Engineers
Soil and Foundation Engineering; Earth Dams; Engineering Geology; Highway and Airport Pavement Design
1150 28th Street, Oakland, California
1240 West Bayaud, Denver, Colorado
310 V.F.W. Bldg., Kansas City, Mo.
4815 Dodge Street, Omaha, Nebraska

International Engineering Company, Inc.
ENGINEERS
Investigations - Reports - Design
Procurement - Field Engineering
Domestic and Foreign
74 New Montgomery St.
San Francisco 5, California

Jacobs Associates
Consulting Construction Engineers
TUNNELS—DAMS
EARTHMOVING—FOUNDATIONS
Methods, Cost Estimates, Plant Design, Management, Surveys, Engineering Geology, Materials Handling
503 Market St., San Francisco 5, Calif.

FOREIGN

Saenz-Cancio-Martin, Ingenieros Alvarez Y Gutierrez, Arquitectos
Consulting Engineers and Architects
Ave. de la Independencia 774,
Ensanche del Vedado, Habana, Cuba.

The Foundation Engineering Company of Puerto Rico
Consulting Engineers
Foundation and Soil Mechanics Investigations, Laboratory analyses, reports and recommendations, design of structures, supervision.
P.O. Box 821, San Juan, Puerto Rico

Puerto Rico Testing Services, Inc.
Soils Engineers
Soil Borings Laboratory Tests
Foundation Analyses Concrete Tests
478 Ing. Jose A. Canals Street
Roosevelt (San Juan), Puerto Rico

Paul L. Nichols & Assoc.
Consulting Engineers
Designs, Plans, Specifications, Reports, Supervision for Civil Engineering projects
Rosenberg Bldg., Santa Rosa, Calif.
P.O. Box 1064, Kailua, Hawaii

INSPECTION & TEST

The Haller Testing Labs., Inc.
140 Cedar St., N. Y. 6, N. Y.
Testing and Inspection of Construction Materials for: Expressways—Airports Structures—Bridges
Complete Soils Laboratory
Test Borings—Load Tests
Boston Plainfield, N. J. New Haven

Robert W. Hunt Company
Inspection and Testing of Engineering Materials & Equipment
General Offices and Laboratories
810 South Clinton Street, Chicago 7, All Principal Cities

Johnson Soils Engineering Laboratory
Foundation Design - Highway & Airport Pavements - Construction Control - Load Tests - Shear & Consolidation Tests - MOBILE LABORATORIES
193 West Shore Ave., Bogata, N. J.
Bogata-Hubbard 7-4408

Pittsburgh Testing Laboratory
A national service with complete laboratory and inspection facilities.
Laboratories in principal cities.
Main Office: 1339 Locust St.,
Pittsburgh, Pa.

AERIAL SURVEYS

Aerial Map Service Co.
Topographic, Planimetric, Photo Maps for Highways, Mining, Resources, Construction. City Maps, Tax Maps, Photo Geology, Tellurometer Radio Distance Measurements, Triangulation, Electronic Computation.
1016 Madison Ave., Pittsburgh 12, Pa.

American Air Surveys, Inc.
AERIAL TOPOGRAPHIC MAPS & AERIAL PHOTOS FOR
• Highways • Airports • Power & Pipe Lines • Railroads • Mining • All types construction • Stockpile inventories
907 Penn Ave. Pittsburgh 22, Pa.

Clyde E. Williams & Assoc., Inc.
Aerial Photos - Enlargements - Topographic Maps
At large and particular scales to suit various engineering needs, e. g. Airports, City Sewer & Water, Power & Pipe lines, Reservoirs, Subdivisions, Highways, Bridges & Inventories.
312 W. Colfax Ave. South Bend, Ind.

GEOLOGISTS

Geologic Associates
ENGINEERING GEOLOGISTS
Studies and Reports
Foundation Investigations
Specialized Drilling and Sampling
1508 8th Ave. So. — Nashville, Tenn.
Phone ALpine 5-4402

CONSULT THESE SPECIALISTS . . .

When you need professional assistance in solving difficult problems. Their specialized knowledge and broad experience can prove invaluable in saving both time and money for you.

Engineering News-Record invites other consultants to list the special services they offer on these pages.

Rates for the Professional Services section are:

PER WEEK

	13 times	26 times	52 times
¾"	14.35	13.35	12.45
1½"	23.85	22.30	21.00

The Consulting Engineer

By reason of special training, wide experience and tested ability, coupled with professional integrity, the consulting engineer brings to his client detached engineering and economic advice that rises above local limitations and encompasses the availability of all modern developments in the fields where he practices as an expert.

CLASSIFIED ADVERTISING INDEX

Albert Pipe & Supply Co., Inc..... 93
Associated Pipe & Fitting Co..... 93
Atkinson Co., Guy F..... 94
Automatic Sprinkler Corp., of America 93
Conmaco, Inc. 94
Drachman Steel Corp., Hy..... 94
Foster Co., L. B. 93
Hardaway Contracting Co., Inc..... 92
Hodge & Hammond Inc..... 94
Hulteng, A. F. 91
Maccabee Campbell & Assoc..... 91
Madison, City of..... 92
Midwest Steel Corporation..... 93
Mississippi Valley Equipment Co.... 93
Penna, Commonwealth of..... 91
Read Corp., Howard W..... 94
Rouse Construction Corp., John W... 91
Southwestern Stamp Works..... 94
Stanhope Inc., R. C..... 93
Sverdrup & Parcel International..... 92
Swabb Equipment Co., Inc., Frank... 93
Union Building & Equipment Co..... 93
United Crane & Shovel Service Co... 94
Van Keppel Co., G. W. The..... 94
Walsh, Perini, Morrison, Kiewit, Utah Companies 93
Whisler Steel Piling Company..... 93
Wikstrom Inc., A. S..... 94
Williams Construction Company..... 94
Wilson Engineering Corp..... 92

"SEARCHLIGHT" Can Help You!

Hundreds of miscellaneous business problems that confront you from time to time, can be solved through the use of the SEARCHLIGHT SECTION of ENGINEERING NEWS-RECORD.

When you want to buy or sell used or surplus new Construction equipment and/or accessories, or have other business wants — advertise them in the SEARCHLIGHT SECTION for quick, profitable results!

ADVERTISERS IN THIS ISSUE

Acker Drill Co., Inc. 85
Aetna Life Affiliated Co. 18
Allis Chalmers Mfg. Co., Tractor Div. 1
American Mutual Liability Insurance Co. .50-51
Armco Drainage & Metal Prod., Inc. .2nd Cover
Automotive & Aircraft Div.
American Chain & Cable Co. 52

Bethlehem Steel Co. 47
Borden Metal Products Co. 20
Broderick & Bascom Rope Co. .....4th Cover

Cleveland Trencher Co. 63
Concrete Reinforcing Steel Institute. 48

Detroit Diesel Engine Div. 5-6
R. E. Dietz Co. 7
Dox Plank Mfrs. Assn. 44
Allen B. Dumont Laboratories, Inc. 32

Elgood Equipment Corp. 70
Esso Standard Oil Company 73

L. B. Foster Co. 6

Garrett Corp. 57
General Motors Corp., Truck & Coach 68
B. F. Goodrich Co., Tire Div. 3
Griffin Wellpoint Corp. 56
C. L. Guild Construction Co., Inc. 76

Hendrix Mfg. Co., Inc. 43
Homelite Div. Textron, Inc. 67

International Harvester Co. (Constr.) 11-13, 74-75

Jaeger Machine Co. 85

Kinnear Mfg. Co. 48

Lead Industries Assn. 9
Lima Works, Construction Equip. Div., Baldwin-Lima-Hamilton Corp. 80
Lock Joint Pipe Co. 16

Manitowoc Engineering Corp. 49
Massey-Ferguson, Inc., Indus. Div. 15
Mayo Tunnel & Mine Equipment 66
K. E. McConnaughay 34
McKiernan Terry Corp. 10
McKinney Drilling Co. 66
W. R. Meadows, Inc. 64
Miller Electric Mfg. Co., Inc. 71

Nassau Trailer & Motor Sales 66
National Gypsum Co. 37
National Tube Div., U. S. Steel Corp. 29

D. W. Onan & Sons, Inc. 56

Portland Cement Association 38-39
Professional Publishing Co. 77

Richmond Screw Anchor Co. 2
Rockford Clutch Div., Borg Warner Corp. . 72

Schramm, Inc. 36
Spencer, White & Prentis, Inc. 53
Strand Steel Corp. Div.
National Steel Corp. 33

E. A. Thompson, Inc. 8
Tube Slab Co. 46

U. S. Steel Corp. 78-79

Vulcan Materials Co. .....3rd Cover

Wild Heerbrugg Instruments 14

Professional Services 95-98

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

Special Services 92
Employment Opportunities 91, 92
Educational 92
Notices
Proposals 88-98
Equipment
(Used or Surplus)
(For Rent, Sales Wanted) 92, 93
Advertisers Index 98

ENGINEERING NEWS-RECORD

330 West 42 St., New York 36—LOngacre 4-3000

ABP Member ABC

Number of copies of this issue printed 82,760

D. S. ROBERTSON, Advertising Sales Manager
D. J. CASSIDY, Business Manager

ADVERTISING REPRESENTATIVES

New York, 2—500 5th Ave.,
C. D. Neulen, H. T. Olsen
J. C. White

Chicago, 11—520 No. Michigan Ave.,
L. H. Hunt, W. G. Payne
J. A. Shipley

San Francisco, 4—68 Post St.,
J. W. Otterson, R. C. Alcorn

Philadelphia, 3—Six Penn Center Plaza
D. G. Jensen

Cleveland, 13—1164 Illuminating Bldg.,
55 Public Square
F. P. DiToro, E. B. Mingle, Jr.

Detroit, 26—Penobscot Bldg.,
D. L. Kates, R. I. Mace

St. Louis, 8—Continental Bldg.,
B. F. Horn

Los Angeles, 17—1125 W. Sixth St.,
Knox Bourne, S. S. Tiebout

Atlanta, 3—Rhodes-Haverty Bldg.,
D. C. Billian

Dallas, 1—Vaughn Bldg., 1712 Commerce St.,
E. E. Schirmer

Pittsburgh, 22—1111 Oliver Bldg.,
M. Russell

Denver, 2—1740 Broadway
J. W. Patten

OTHER SALES OFFICES:

Boston, 16—350 Park Square Bldg.,
Great Britain—Herbert Lagler, McGraw-Hill House, 95 Farrington St., London, E. C. 4
Europe—Michael R. Zeynel, Am Leonhardsbrunn 12, Frankfort/Main, Germany

the
CONSTRUCTION DAILY
can help you

KEEP AHEAD OF
competition

STABILIZE YOUR
new business
procurement

GO AFTER the
most profitable
jobs

PLAN AHEAD

MOVE with the
market

For only 70¢ per day you get a 2-in-1 Service . . .

CONSTRUCTION DAILY—NEWSLETTER

—24-hour advance news on big bid dates, top jobs, planning ahead, trends, costs and prices, appropriations, major events.

These name owners, engineers, architects, give job descriptions, dates, locations, estimated costs.

—reports on PROPOSED WORK (averaging over $100 million a day)

CONSTRUCTION DAILY—REPORTS

—a long lead on BIDS ASKED, LOW BIDDERS AND CONTRACTS AWARDED (averaging over $70 million a day).

These name contracts and owners, show type of work and contract price.

For your sample copies of CONSTRUCTION DAILY and information on how this construction market letter can help your business, write to

Manager, CONSTRUCTION DAILY
PO Box 89, Times Square Station
New York 36, N. Y.

What Happened at Vancouver?

IT WOULD BE A MOCKERY of those who grieve for lost lives and a callous shrug at a staggering loss of money and effort to pretend there is a bright side to the collapse of the new Second Narrows Bridge at Vancouver (ENR June 26, p. 21). There isn't. But it would also be criminal not to make every effort to gain something of value from this involuntary expenditure of lives and money. Accordingly, we commend the government of British Columbia for making a swift move toward finding out exactly what happened and why.

The investigation ordered by Premier William A. Bennett's government in effect instructs Chief Justice Sherwood Lett, acting as a one-man Royal Commission, to overlook no possibility in trying to uncover the cause of the disaster. Those intimately involved in the project have welcomed the investigation and have pledged their cooperation.

The Vancouver collapse is tragically reminiscent of a similar catastrophe in 1941 during erection of the Charter Oak Bridge over the Connecticut River at Hartford. In that collapse some 220 ft of a 270 ft plate girder span on an erection bent fell into the river, taking 15 lives and injuring another 16 (ENR Dec. 11, 1941, p. 1). Connecticut's governor immediately ordered an investigation under a very reputable engineer, Charles M. Spofford of Fay, Spofford & Thorndike, Boston. The engineers completed and submitted their report. But the report was "interred."

Someone has said that all we learn from history is that we learn nothing from history. And the fact is that history does appear to repeat itself. The vagaries of nature are recurrent and the failings of men reappear. But we simply must learn from history. And if a general type of construction failure appears to have recurred, let not the failure to learn from it recur.

If the facts revealed after the probe in British Columbia make as much sense as the order that the probe be made, then Justice Lett, his legal and technical aides, the designers and builders of the bridge and the British Columbia government will have extracted for the construction industry and society in general the only good that possibly can come of such a calamity—a lesson.

Better Than Nothing

THE KENNEDY-IVES LABOR BILL passed by the Senate deserves better than it appears due to get from the House of Representatives.

Here is a bill that both labor and management can live with. The Senate passed it 88 to 1. It offers workable anti-racketeering provisions. Together with the pending health, welfare and pension bill, it represents constructive progress in the most urgent field of labor legislation. And those features of the bill tailored to the needs of the construction industry will serve a useful purpose although the pre-hire contract approach is not agreeable to all (ENR June 26, p. 24).

Building trades officials are generally in favor of the bill, but they are expected to seek amendments during House debate. Building trades employers, too—the Associated General Contractors and the National Association of Home Builders—have certain reservations they'd like considered by the House.

It is hoped that neither construction's labor nor construction's management will be the cause of a promising labor bill being bottled up in Congress. It would be wrong to attempt the impossible and struggle to make this piece of legislation the ultimate, ideal labor law for our industry. It would be far better if Congress were urged by the construction industry's labor and management to pass this Labor-Management Reporting and Disclosure Act of 1958. Let's save energies for working out other ideal and more fundamental Taft-Hartley law amendments for a time when the political atmosphere might be more conducive to sensible debate on such controversial provisions.

Shortsightedness on Salaries

THE PLIGHT OF THE TEXAS BOARD OF WATER ENGINEERS, trying to recruit top level talent for middle level salaries (p. 26) would be amusing if not so serious.

It is ironic to see rich, powerful and normally progressive Texas stymied temporarily in efforts to assure its great future by having set up too low a pay schedule for the men it should have to develop the type of master water plan it needs. Critics of this small thinking, in the state where everything is supposed to be big, cannot be accused of Monday morning quarterbacking for the present pay dilemma was cited even before it was created. The Board of Water Engineers made the strongest of protestations to the legislature last November when the pay schedules were being set up.

The seriousness of the situation lies in the fact that Texas has been needing a master state water plan for some time. Each year's delay—and apparently another year already has been lost—means that more industry has built elsewhere because its water needs could not be assured. The Board of Water Engineers is supposed to submit a preliminary plan to the state legislature next January. It certainly will have difficulty meeting that deadline.

The moral in this shortsightedness should be obvious to the rest of the nation: Salaries need to be scaled to the job to be done if the job is to be made attractive to men who can do it. It is to the credit of the Texas Board of Water Engineers that it has refused to compromise by hiring mediocre talent to wrestle with the state's massive water planning problem, a problem that will tax even the experts.